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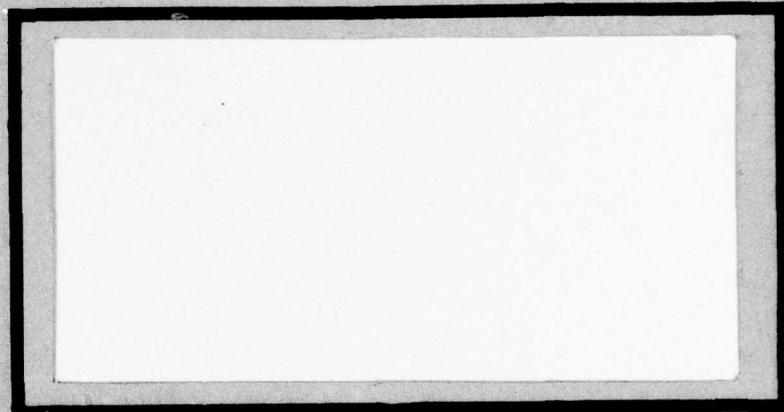


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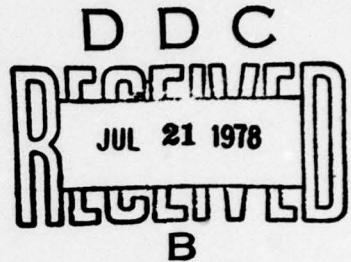
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WHAT IS THE VALUE
OF THE COMMISSARY PRIVILEGE?
A CASE STUDY
AT WRIGHT-PATTERSON AIR FORCE BASE

THESIS

GSM/SM/77D-18

George E. Boyd
Capt USAF

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WHAT IS THE VALUE OF THE COMMISSARY PRIVILEGE?:
A CASE STUDY AT WRIGHT-PATTERSON AIR FORCE BASE

THESIS

Presented to the Faculty of the School of Engineering
of the Air Force Institute of Technology
Air University
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science

by
George E. Boyd
Capt USAF
Graduate Systems Management
December 1977

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Acknowledgments

Darci, my wife, best friend and "personal secretary" deserves much credit for my completion of this study. She encouraged, advised and typed. Together with our three children, she helped keep my outlook bright, not only during preparation of this thesis but during our AFIT experience.

I received advice and information from many people during the preparation of this report and would like to express my appreciation for their assistance. My appreciation is especially extended to my faculty advisors in the Systems Management Department at AFIT, Norman K. Womer and Joseph P. Cain.

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Abstract

This study makes use of price comparison data from the Wright-Patterson Air Force Base Commissary and two local supermarkets in order to provide a current percentage of savings which can be realized by shopping at the commissary. A "Commissary Shopping Survey" was distributed to active duty military personnel in the grades from Airman Basic to Colonel. The survey contained questions that make it possible to determine the "perceptions" of value by the active duty personnel. When the percentage of savings which was found in this study is incorporated into a cost model along with data from survey returns the "value" of the commissary privilege at Wright-Patterson can be estimated.

The new considerations in this study on the value of the commissary privilege are: (1) the percentages of savings in this report consider all of the direct costs of groceries; and (2) a value is assigned to time spent shopping for groceries. The estimated "values" are applicable only to active duty military personnel stationed at Wright-Patterson Air Force Base, but the methodology is relevant to the study of the value of the commissary at any military installation.

WHAT IS THE VALUE OF THE COMMISSARY PRIVILEGE?:

A CASE STUDY AT WRIGHT-PATTERSON AIR FORCE BASE

I. Introduction

History

The history of the subsistence of the Armed Forces of the United States has been characterized by change. The evolutionary process that has brought about the present system of military commissaries started with the organization of the Continental Army in 1775. In July, 1775, while encamped at Cambridge, General Washington noticed how well Joseph Trumbull supplied the troops from Connecticut and sent a letter to Congress requesting that Trumbull be appointed Commissary General. Congress passed a resolution granting the request of General Washington and appointed committees to exercise fiscal control over the supply departments of the Army (Ref 2:2; Ref 18:1).

Under this system as envisioned by Washington and outlined by Congress, Trumbull had the authority and responsibility to provide rations for the troops and was directly accountable to General Washington. On July 10, 1777, Congress passed new regulations governing the Commissary Department which took some control away from Trumbull since the new regulations provided for four deputies to be appointed by Congress. The War was escalating and Congress felt that Trumbull needed support, but Trumbull saw the new regulations and his new assistants as hindrances to smooth operations and asked to be relieved of his duties as Commissary

General. The military field commanders lost much of their control over the subsistence of the Army as a result of this Congressional action, a situation that was to cause a lot of problems during the next forty years.

As the fighting spread from New England to the Mid-Atlantic Colonies, the problems of supplying rations for a mobile and scattered Army increased; food became more and more scarce and expensive. Prices in 1780 were approximately twenty times the prices in 1774. The conditions of inflation and shortage invited profiteering by high-priced peddlers who were called sutlers.

The prices charged by the sutlers reflected the rampant inflationary trend brought about because Congress printed large amounts of Continental currency without sound backing and because the Colonies had a questionable ability to make good the debts incurred by the new government. The prices also tended to be high because the soldiers were not paid as frequently as promised and often months went by before troops in the field received their pay. The sutlers also had to contend with bad debts, death and desertion by indebted troops, therefore they charged a risk premium when selling rations to troops on credit (Ref 18:10, 19). During the last few years of the Revolutionary War, Congress moved the Commissary Department first to the Board of War and later placed it under the Superintendent of Finance in its efforts to find a satisfactory solution to the problems of subsisting the Continental Army.

Post-Revolutionary War Years. After Cornwallis surrendered to

Washington at Yorktown in October, 1781, public sentiment grew in opposition to the maintenance of a standing army during a time of peace; it was thought to be incompatible with the principles of free government (Ref 5:2). Under the Constitutional reorganization in 1789 the supply functions of the Army were vested with the Secretary of War (Ref 2:25). Supply contracts, where officials in the Commissary Department placed orders with civilian contractors and left the delivery and distribution of the supplies to the contractors, were used during the Revolutionary War. A contract to supply provisions to the troops at Fort Pitt was signed in March, 1791, and proved to be a regrettable precedent in subsisting the Army in the Post-War era. The system of supply contracts was characterized by embezzlement and fraud; frequently supplies were late in reaching their destination and spoilage combined with substandard quality left the troops on the frontier dependent on the sutlers.

The military commanders and Government officials recognized the role of the sutlers and their contributions in supplying provisions to the troops and tried to give official recognition to the sutlers by licensing them. The licensing became infrequent and intermittent depending on the need to scrutinize and control the activities of the sutlers. (Ref 5:17; Ref 18:10)

Supply responsibilities were given back to the Treasury Department in May, 1792, but apprehensions of a war with France in 1798 prompted Congress to return the Commissary Department to the War Department (Ref 2:29). The Military Peace Establishment Act of 1802 provided for

three "Military Agents" and a number of assistants who were "to purchase, receive, and forward to their proper destination, all military stores and other articles for the troops in their respective departments..." (Ref 2:31). The Military Agency system was not significantly different from the system of supply contracts and proved to be as defective and inefficient. The appointed Military Agents had no military rank and were not directly accountable to the military departments.

The War of 1812 and Following Years. No action was taken to address the inadequacies in military subsistence until 1812 when conflict with Great Britain was apparent. The Office of Commissary General was reestablished under the Office of Quartermaster General in April, 1812, but this was another shift in responsibilities and did not functionally alter the method of subsistence (Ref 2:32).

The terms "Subsistence Department" and "Commissary Department" appear to be used interchangeably in the reference material even after the title was officially changed to the Subsistence Department in 1818 (Ref 5:4). At the end of the War of 1812 Congress immediately enacted legislation to reduce the size of the standing Army and began a review of the problems that had arisen during the War.

The Committee on Military Affairs of the House of Representatives in addressing the problems of subsistence during the War of 1812, asked James Monroe, then acting Secretary of War, to assess the subsistence of the Army. Not wanting to rely on his own judgement, Monroe asked

for testimony from top Army officers. General Winfield Scott pointed out many of the problems in contracting for provisions and the political and vicious nature of such a system. General Gaines said that he was compelled to go around the contractors and have his officers buy provisions themselves and that, in his opinion, the Army lost more men due to bad provisions than by enemy fire during the War of 1812. Gaines volunteered to experiment with having line officers in his command provide rations for the troops and promised that the price would be as cheap and probably cheaper than under previous systems. Colonel Fenwick emphasized the need for the Subsistence Department to be responsible to the field commanders and pointed out that Europeans have never used a system of contracts with any success and have always returned to a direct method of subsisting their armies (Ref 2:41-43).

Contemplating further reduction of the Army in 1818, the House of Representatives asked John C. Calhoun, Secretary of War, for his evaluation of the impact of further reduction. His reply outlined general principles upon which the military peace establishment should be organized and was stated as follows:

"The great and leading objects then of a military establishment in peace ought to be to create and perpetuate military skill and experience, so that at all times the country may have at its command a body of officers sufficiently numerous and well instructed in every branch of duty, both of the line and staff... the leading principle in its formation ought to be, that in the commencement of hostilities there should be nothing either to new model or to create." (Ref 5:3)

Under Secretary Calhoun the Subsistence Department was reorganized and the purchase and issue of provisions became a purely military

operation. Direct subsistence of the armed forces has continued with only a few changes in the principles of operation since 1818 and has given satisfactory results both in peace and war.

The Mid-Nineteenth Century. The Subsistence Department was highly effective in the nineteenth century following its establishment in 1818 and much of the success can be attributed to the tenure of the Commissaries General and many of the staff officers in the Department. General George Gibson served as Commissary General for over forty-three years, 1818-1861, and saw the Subsistence Department expand its operations from the Mississippi River westward to Oregon and California. Commenting on the commendable job that was being done by the Subsistence Department during the Civil War years President Lincoln, during a visit to Richmond in 1865, said to an officer in the Subsistence Department: "Your Department we scarcely hear of; it is like a well-regulated stomach, works so smoothly we are not conscious of having it." (Ref 5:5-9)

The variety of goods that could be handled by the Commissary Department was restricted to the items in the official list of rations. The list of articles that made up the daily ration was determined by Congress and was frequently amended by the President or the Secretary of War. After 1795, items in the daily ration could be exchanged for cash because items were frequently out of stock. Commutation of rations became a matter of preference after the Civil War.

Formal sales of rations to officers for personal subsistence was allowed in 1826, and in 1841 the regulations were changed so that officers could purchase provisions from the commissaries for themselves and their

families; the enlisted troops still had to depend on the issue of rations (Ref 5: 16 - 17). After the officers were allowed to purchase directly from the commissaries, the variety of items stocked by the commissaries increased; this was especially true during the Civil War years since the regulations were either ignored or liberally interpreted. "Articles for sales to officers" were generally those "illegal" items that could not be stocked by the commissaries but seemed to be in abundance. For example, hams were shipped as bacon (Ref 5:17).

A Congressional act in 1866 gave enlisted troops the right to purchase articles from the commissary. A War Department order in 1866 directed the Subsistence Department to:

"Purchase reasonable quantities of the articles usually required for the subsistence of an officer, and cause the same to be forwarded to posts and stations remote from markets, where officers are mainly dependent upon the Subsistence Department for supplies, or where they cannot purchase groceries at reasonable prices." (Ref 5:19)

"Remote from markets" and "Cannot purchase groceries at reasonable prices," which were phrases from earlier legislation and directives that established prerequisites for direct purchase of goods by officers, were given liberal interpretation by the Commissary General in 1867. It was directed that a commissary be built at Fort Delaware, near Delaware City, Delaware. Before this time every installation did not have a commissary; a commissary could be a receiving and distribution center or simply a coordination office for shipments of supplies that were purchased from and shipped by the contractors. The number of commissaries rapidly increased after 1867 and commissaries took on the characteristics

of grocery stores of that era. The Marine Corps opened its first commissary in 1909, the Navy in 1910, and the Air Force in 1947 (Ref 13:412).

A Contrast of Settings. The central purpose and overall theme of the operations of the Subsistence Department has always been one of supporting the troops in situations vital to our national interests. Supporting troops involved in wars at home and abroad, protecting property and citizens on the frontier during westward expansion, and military personnel on alert are situational examples that agree with the basic purpose and with all legislated restrictions. In 1835, after the officers were given restricted direct purchase privileges, there were about one hundred military posts, with Fort Leavenworth being the western-most installation. Most of the military installations were on the sea coasts and only twenty-one were considered to be in "remote" or frontier locations (Ref 5:5).

Today one would find it difficult to find an installation in the Continental United States (CONUS) that would fit the description of being remote from grocery markets and the reasonableness of prices should not be a major issue since civilian residents pay the market prices. However, there are many other factors to be considered in a discussion of the merit of our present system of military commissaries which will not be discussed in this report.

Legislative Influence. Legislative efforts to make the patrons of the commissaries share a larger portion of the operating expenses are not new. In 1879, shortly after the commissaries were opened to direct purchases for all ranks, Congress added a ten percent charge to the cost

of all items, except tobacco, sold in the commissaries, which was to cover spoilage, transportation costs and other incidental costs. A Congressional act in 1884 removed the ten percent charge and reestablished pricing on a cost basis (Ref 5: 19 - 20).

During the last twenty-five years Congressional actions have gradually moved the commissary stores back toward a self-sustaining basis of operation. In 1952 Congress required that commissaries become self-sustaining for the purchase and maintenance of operating equipment and supplies, transportation of goods, and utilities; appropriated funds still paid for the transportation costs and the utilities for locations not in the CONUS (Ref 13:412). The additional charge, surcharge it was called, was to be a percentage of the cost of the groceries and supplies to the commissaries and is added to the shelf prices of individual items, as is done by the Navy and Marine commissaries, or to the total cost of a market basket of groceries when it is checked by the cashier, as is done in Air Force and Army commissaries.

In December, 1974, Congress passed legislation that required an increase in the surcharge to three percent in order to generate funds for construction and improvements of commissary store facilities; this legislation also provided for the surcharge to be increased to four percent in February, 1976, and is the surcharge in effect today.

Current Issues

In recent years the military commissary stores have come under attack from the Congress and the Office of Management and Budget. The

major contention is that appropriated funds are being used inefficiently to accomplish the primary objective of troop support; appropriated funds subsidize military "grocery stores" which compete with commercial grocery markets which are in close proximity to almost every military installation in the CONUS.

Rising Costs and the Combat-to-Support Ratio. There were approximately one and one quarter million people in the Air Force in 1968 and by 1973 the number was down to around eight hundred and ninety thousand. In spite of this significant reduction in strength, commissary retail sales rose over the same period at an annual rate of ten percent.

Inflation accounted for part of the increased sales, but adjusted sales based on 1969 dollars indicated a real increase of approximately five percent annually (Ref 21:1). The factors that created the increase in sales in light of sizeable reductions in force were that growing retirement roles kept the number of eligible commissary shoppers near constant and high inflation rates made commissary shopping more attractive. These same factors have continued to affect commissary sales which have increased in the years since 1973.

Since commissary manning is tied to commissary sales, manning is now a larger percentage of the total force. The Department of Defense has expressed concern over the combat-to-support ratio which describes the relationship between combat-ready personnel and those who are required to function in support activities (Ref 21:2). The relative increase in the number of support personnel seems to be a logical progression in an era of high technology and sophistication, especially given increased

budgetary constraints. For example, the maintenance of an F-15 requires more people who are better trained to use expensive, sophisticated equipment than did the Sopwith Camel in World War I or the P-47 in World War II. Even though commissary manning has only slightly affected the combat-to-support ratio there is added incentive to criticize the commissaries from this point of view.

Increasing appropriated support costs is an area of major concern by many in Washington. Between 1970 and 1975 the appropriated support costs for the military commissaries increased by about one hundred million dollars (Ref 13:409). This increase in support costs was due to an increase in the number of commissary employees and increases in pay during the period. Appropriated funds for the commissaries for the fiscal year 1977 was three hundred and twelve million dollars.

Proposed Changes. There have been several recommendations for changing the commissary system. In 1975 General E. W. Bowers headed a study group which looked into the operations of the military commissaries. The study was the result of a directive from the Secretary of Defense. The Secretary had approved alternative number 5 from Program Budget Decision number 282 in December, 1974. Alternative 5 would have made the commissaries self-sufficient over a two year period. The study group was commissioned to study and evaluate several alternatives for future commissary operations before implementation of change (Ref 24: 1-4, 1-8).

The following alternatives were considered by the study group:

- a) Alternative 1 -- centralized management within each service

- b) Alternative 2 -- merger with the Exchange Systems
- c) Alternative 3 -- joint service commissary agency (centralized management for commissaries in all services)
- d) Alternative 4 -- Government owned, contractor operated stores

The study group recommended that each service establish centralized, commissary management (Ref 24: 2-4).

The Presidential Budget for fiscal year 1976 proposed that the military commissaries become self-sufficient over a two year period which is the alternative from Program Budget Decision 282 that the Secretary of Defense favored. The present system of management would not have been altered by this change and the costs of transportation of merchandise overseas would not be passed on to the customers. This proposal has received Congressional consideration for the last two years. During the first year of the program fifty percent of the costs not covered by the present surcharge would be passed on to the customers and starting the second year, one hundred percent of the costs of operations would be passed on to the customers through increases in the surcharge (Ref 13:412-13). The justification given by the Ford Administration for the two year program was that military pay was now comparable to civilian pay. President Carter, in a televised question and answer show in Los Angeles, said that he did not think it to be "unreasonable for the taxpayers to demand that the military at least pay enough for goods they buy to cover operating expenses." (Ref 22:9; Ref 13:411) However, Congress decided to allow each service to centralize commissary management

and kept the appropriated funds for the salaries of commissary employees.

Possible Implications of Change. The primary implication of any of the alternatives that have received attention is that the value of commissary benefit would be reduced. An increase in prices at the commissaries would be translated into a reduction in demand according to basic economic theory. The degree to which the commissaries would lose business depends, in part, on the price elasticity of demand for commissary goods and this is strongly influenced by the availability of substitute goods which in this case are supermarket goods. If the surcharge were allowed to increase so as to cover all costs of operations it would mean that fewer and fewer customers would support more and more of the expenses.

Under the two year program suggested in 1976 the final savings to the commissary customers would have been approximately one half of the estimated savings provided by the commissary at that time (Ref 13:411). This system, if allowed to follow its natural course, could do away with commissaries altogether in areas with abundant commercial supermarkets.

Figures 1 and 2 illustrate how raising prices in the commissaries to recover the "average variable costs" would impact the demand for commissary goods. The term "average variable costs" roughly corresponds to the types of costs that would be passed on to the commissary customers. The costs that the two year plan would collect from the customers are less than average total costs since store and warehouse rental and finance charges on operating capital would not be recovered. For the sake of illustration it will be supposed that the prices charged to the commissary customers will attempt to recover average variable costs. Figure 1

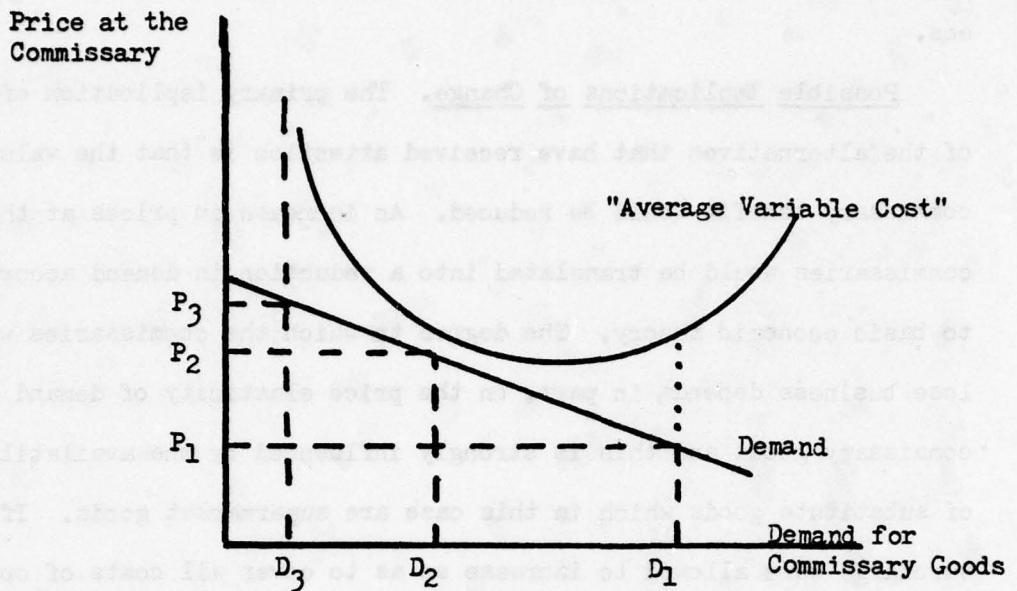


Figure 1. Highly Competitive Market Environment

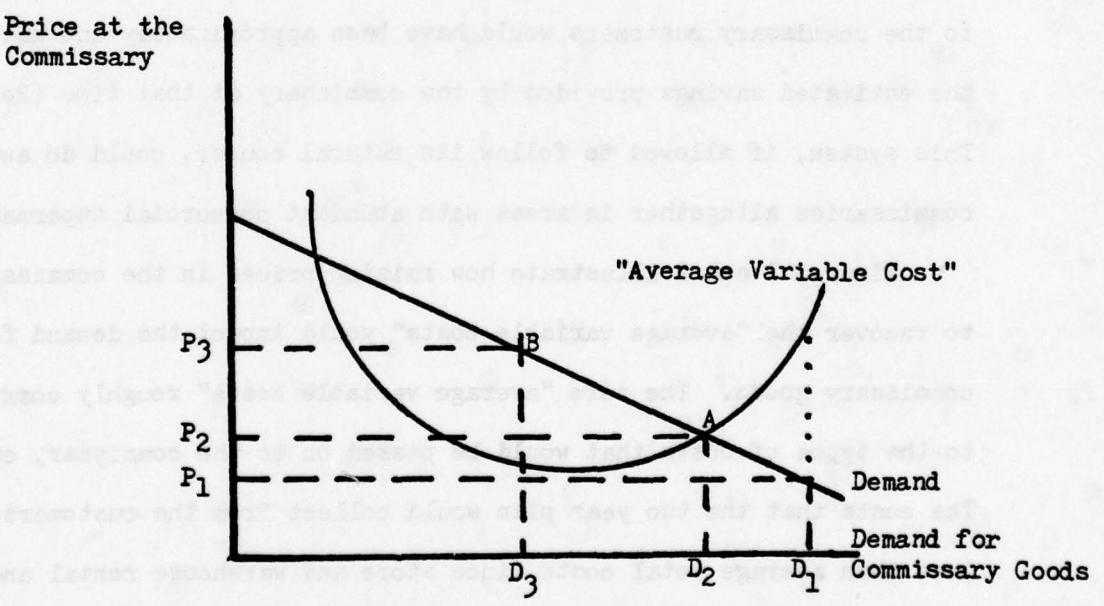


Figure 2. Market Environment with Little Competition

demonstrates how the price increases could affect commissaries in areas where there are many supermarkets. Figure 2 illustrates a commissary in a more remote environment with little competition from local supermarkets.

In the highly competitive environment, Figure 1, the commissaries may not be able to cut back on operating costs enough to keep the commissary in operation. If the average variable cost curve cannot be shifted downward any further than shown in Figure 1 then the commissary will go out of business. As prices are increased in order to generate revenue that will cover average variable costs, the demand for commissary goods is progressively reduced from D_1 to D_3 .

The commissary with little competition in Figure 2 may start out charging a price, P_1 , that will not cover average variable cost with demand at D_1 . As prices are increased this commissary will reach a breakeven point at point "A" and would be able to generate revenue in excess of average variable cost if allowed to do so, point "B".

All of the proposed changes would seem to include some negative impact on morale in the military, and to significantly diminish the commissary benefit would be viewed as a breach of faith by those who have retired from the military (Ref13:413). The size and frequency of the increases in the surcharge have not significantly affected commissary sales, quite the opposite as previously pointed out, nor have they noticeably reduced the commissary as a "perceived" military benefit. If further moves toward self-sufficiency are necessary, then a slow, calculated method seems most appropriate in order to minimize the immediate impact on the real income of those who use the commissaries.

There is the possibility that the Presidential Blue Ribbon Commission on Military Compensation will find a satisfactory solution to the apparent commissary dilemma. However, before consideration can be given to changing or eliminating the commissaries it seems reasonable that one would need to know the value of the existing commissary system to commissary customers.

Current Information on Savings. The only information that has been readily available heretofore that "measures" the value of the commissary privilege has been a "percentage of savings" figure. The method of calculating the percentage of savings was changed in 1976. The old method included weighting factors which were derived from consumer information obtained from the United States Department of Agriculture. These weighting factors were supposed to represent the number of times per year that "the average family" would purchase a given grocery item (Ref 25). The mechanics of the new system are similar to the old system, but there are two major differences.

The first difference is that the present system does not make use of the weighting factors. The second difference is that the two methods use different divisors in the final calculations, the old method divided by the total of the commissary prices while the new method divides by the total of the averaged supermarket prices.

Under the current system two supermarkets are used to provide comparative prices and are chosen based on several criteria such as size and location. The prices for a large, predetermined market basket of groceries are recorded from each store and the supermarket prices

for each item in the market basket are averaged. To the maximum extent possible, comparisons for each item are made using the same brand, size, and quality in all stores. (Ref 25). Under the old method each average price is multiplied by the associated weighting factor and the resulting products are totaled. Likewise, each commissary price is multiplied by the corresponding weighting factor and the products are summed. The difference between the two "weighted" totals is then divided by the "weighted" total of commissary prices and converted into a percentage figure. The method that is now used by the Commissary Service sums the averaged supermarket prices and subtracts the total of the commissary prices and divides the difference by the total of the averaged supermarket prices.

The new percentage of savings is that percentage which is saved by shopping at the commissary; it is a discount percentage that is applied to the supermarket prices that would normally be paid without the commissary privilege. The old "percentage of savings" reflected how much more would be paid for groceries, using commissary prices as a base, if the commissary is not used; it is the percentage that commissary prices would have to be marked up to equal the average supermarket prices.

The last official price comparison study at Wright-Patterson Air Force Base used the old method and was accomplished in February, 1976. The reported "percentage of savings" was approximately 33%. If the weighting factors are left in the calculations and the difference in the total prices is divided by the total supermarket prices, the percentage

of savings is approximately 25%. Making the same comparison using a 1972 Wright-Patterson study, where the reported "percentage of savings" was 41.4%, the corrected percentage of savings would be 29.3%.
(Ref 25; Ref 26)

During the last several months the Air Force Times has been publishing savings figures, some of which were provided by the Air Force Commissary Service. The average of the percentages of savings from data collected last year by the Air Force Commissary Service was approximately 25%. Price comparison studies performed earlier this year provide somewhat lower percentage of savings figures which ranged from approximately 21% to 25% (Ref 4; Ref 15; Ref 17; Ref 20). A husband and wife team from the Air Force Times made price comparisons at fourteen military installations during the summer of 1977. The market basket used by the couple was much smaller than the one used in official surveys and their calculations were inconsistent with Commissary Service calculations. Their "percentages of savings" were calculated by dividing by total commissary prices instead of total supermarket prices. The actual percentages of savings were reported as "percent loss" and ranged from approximately 16% to 18% (Ref 16).

Statement of Problem

The most readily available information to the commissary customer has been inconsistent and incomplete. A literature search of information that is most accessible to commissary customers indicates that there has never been a complete explanation of how the percentage of

savings is determined. There has been only brief and occasional mention of how the surcharge, sales tax, and tip would impact the actual percentage of savings. There appears to be a downward trend in the percentage of savings to be had by shopping in the commissaries, as the 1972 and 1976 Wright-Patterson surveys and the results from recent studies that were reported in the Air Force Times seem to support.

This trend is mainly due to factors in the commercial market place which have tended to reduce the profit margins in the supermarket industry. The rapid growth of convenience food stores and fast food restaurants in recent years has been hurting the supermarket food sales. Convenience store sales went up by 20% during 1976 and reports from the United States Department of Agriculture show that Americans now eat 18% of their meals away from home and spend 36% of their food dollars dining out (Ref 14).

While other businesses have been cutting into their sales, supermarkets have generally been forced to keep prices low in order to compete with each other. A declining birthrate, the increased patronage of convenience stores and more food dollars being spent dining out have produced a condition that one food-industry consultant describes as "grossly overstored" (Ref 14). Supermarkets are adding more non-food items to their inventories in efforts to stay in business. Last year supermarket chains had a 0.6% profit margin on sales and industry officials say that this margin would have been wiped out if it had not been for sales in the non-food areas.

What the preceding information and trend analysis indicates is that

commissary savings information is probably misleading since each commissary is required to make a price comparison only every three years. In areas that may be "overstored" or where competition between supermarkets is otherwise intense, it would also indicate that the percentages of savings may be lower than the occasional and scattered price comparisons would suggest.

Wright-Patterson Air Force Base is just east of and practically adjoining the Dayton metropolitan area. In this area there are at least seven supermarket chains with several stores each, a large number of privately owned supermarkets, and three or four grocery warehouses. There are also at least five convenience food store chains in the area. This area seems to fit the "overstored" situation with its abundance of supermarkets (Ref 9). The area is definitely not dominated by a few big chains, a condition that a University of Wisconsin study said would tend to keep grocery prices high, even though two of the chains claim a majority of the sales (Ref 23). There was a long price war between the area supermarkets which lasted for about three months during the spring and summer of 1977. The price war may not have significantly reduced prices but it did tend to make shoppers more price-conscious. Dayton is somewhat centrally located with respect to where many of the staples in the American diet are grown, processed, and packaged. Intuitively this could mean that Wright-Patterson is in a relatively low-cost food area.

Since many factors that could affect the value of the commissary privilege have been omitted in the usual price comparison studies, it seemed worthwhile to attempt to determine the real value of the commissary privilege at Wright-Patterson Air Force Base. In particular, the

central theme of this report will be the evaluation and discussion of the question: "What is the actual value of the commissary privilege to active duty military personnel stationed at Wright-Patterson Air Force Base?"

Methodology in Abstract

A "Commissary Shopping Survey" was distributed to a random sample of active duty personnel stationed at Wright-Patterson Air Force Base in the ranks from Airman Basic to Colonel. The survey attempted to address another aspect of the real cost of shopping for groceries that has not been considered before: the value of time to the customer. This study makes use of a simple conceptual cost model which utilizes assigned values for time spent shopping for groceries. Since shopping at the Wright-Patterson Commissary seems to be more time intensive than shopping at local supermarkets, the time element may significantly increase the real cost of groceries purchased at the commissary. Also, the time element probably has a significant impact on grocery shopping habits of eligible commissary customers.

An extensive price comparison study was performed in order to obtain a current percentage of savings. The percentage of savings included the surcharge, an estimate for tipping, and the Ohio state sales tax. The survey also contains several unique questions which will reveal "perceptions" and estimates of the value of the commissary benefit. The "perceived value" will be compared to the "actual value", which will be estimated by utilizing the percentage of savings found in this study and the cost model.

II. Methodology

Since the Wright-Patterson area has many supermarkets, the number of alternatives for grocery shopping is large. Two supermarkets which are near the base were chosen to provide price comparison data. Both supermarkets are centrally located with respect to where the majority of active duty personnel live. One supermarket is a store in a regional chain and the other belongs to a major national supermarket chain. The two supermarkets belong to the two chains that have the majority of total grocery sales in the Dayton area, according to recent advertising. Prices in the two supermarkets were assumed to be competitive with area stores and no effort was made to determine which stores in the area offer the best prices. The supermarkets were selected mainly on the basis of location and store size.

Costs

In order to evaluate the value of the commissary privilege it is necessary to identify all of the costs involved in shopping for groceries at the commissary and at the supermarkets. The average of the prices in the two supermarkets will serve as a single price to be compared against the price of the same item in the commissary.

Direct Costs. In this study the costs of groceries were categorized into direct, indirect, and "environmental." The direct costs are those costs that require an immediate payment of money at the time of purchase. Shelf prices, Ohio state sales tax, the 4% commissary surcharge, and

tipping of the bagboys at the commissary are the components of direct cost that are considered. An item for item comparison was made of shelf prices and an explanation of the price comparison will be provided in the next chapter. Ohio has a 5% sales tax that is applied to non-food items and beverages which are not pure juice. For example, Hi-C juice drink is taxable as well as all soft drinks. The state sales tax does not apply to any of the products in the commissary.

The 4% commissary surcharge effectively increases the shelf price of all products sold in the commissary by 4%. The surcharge in Air Force commissaries is added to the total of the shelf prices for all items in the market basket as the customer checks out. For example, if the total of the shelf prices for a market basket was \$10, then the surcharge would be .04 times \$10 which would bring the total price of the basket of goods to \$10.40. The bagboys at the commissary are not store employees but are employed by the customers and a tip is expected for the service rendered. Bagboy duties at the two supermarkets are performed by store employees and carryout service is not provided unless requested.

Indirect Costs. Indirect costs comprise the second category of costs and are those costs that do not necessarily require an immediate payment of money at the time of purchase. They are concerned with the utilization of time, personal transportation costs and various other expenses that do not directly influence the amount of money paid for groceries. The element of indirect costs that is dealt with directly in this study is the value of time.

"Direct" transportation costs would include vehicle depreciation based on miles driven, gas consumption, or maybe taxi fare.¹ Devising a method to isolate transportation costs was not included in this study since it was assumed that these costs would be approximately equal for shopping at the commissary and at a supermarket. If transportation costs were considered, there would be a problem in identifying transportation costs since it would be hard to apportion costs to each stop when other stops are made in conjunction with a grocery shopping trip. It was assumed that few active duty people would have to rely on a taxi for transportation and that other transportation costs are "general operating expenses" and would be incurred without regard to where one shops for groceries. Child care expenses and reduced income where one has to take time off from work to shop for groceries are examples of indirect costs that would fall into a miscellaneous category. No attempt is made to apply these miscellaneous indirect costs in this report.

"Environmental Costs." The "environmental costs" are the non-monetary factors that influence personal preference. They can affect where one shops for groceries, especially if the prices of groceries in all of the stores are reasonably competitive. A recent report in Progressive Grocer, a grocery industry trade magazine, ranked prices fifth behind cleanliness, clear price marking, good produce, and freshness dating (Ref 8). Table I contains the ranking from this report. Many of the 37 factors on the list used in that report could be defined as "environmental costs" according to the definition given above.

¹"Indirect" transportation cost, in this case, is the value of travel time to the customer.

Table I

By ROBERT DIETRICH

How Shoppers Weigh 37 Factors In-Pledging Store Loyalty

| Importance to Shoppers (Rank) | | | Importance to Shoppers (Rank) | | | |
|----------------------------------|------|------|--|------|------|-----|
| 1973 | 1975 | 1977 | 1973 | 1975 | 1977 | |
| 1 | 1 | 1* | Cleanliness | 19 | 21 | 21 |
| 2 | 2 | 1* | All prices clearly labeled | 23 | 24 | 22 |
| 3 | 5 | 3 | Good produce department | 21 | 23 | 23 |
| 7 | 6 | 4 | Freshness date marked on products | | | |
| 5 | 3 | 5 | Low prices | 22 | 25 | 24 |
| 6 | 4 | 6 | Accurate, pleasant checkout clerks | 27 | 26 | 25 |
| 8 | 8 | 7 | Shelves usually well stocked | 28 | 22 | 26 |
| 15 | 10 | 8* | Convenient store location | 25 | 27 | 27 |
| 4 | 7 | 8* | Good meat department | 31 | 30 | 28 |
| 9 | 9 | 10 | Good parking facilities | 28 | 28 | 29 |
| 11 | 13 | 11 | Good layout for fast, easy shopping | 33 | 31 | 30* |
| 17 | 12 | 12 | Helpful personnel in service departments | 30 | 29 | 30* |
| 12 | 11 | 13 | Good dairy department | | | |
| 16 | 14 | 14 | Frequent "sales" or "specials" | 29 | 33 | 32 |
| 13 | 15 | 15 | Short wait for checkout | 35 | 32 | 33 |
| 18 | 17 | 16 | Don't run short of items on "special" | 32 | 34 | 34 |
| 20 | 20 | 17 | Baggers on duty | 36 | 35 | 35 |
| 14 | 19 | 18 | Aisles clear of boxes | 34 | 36 | 36 |
| 24 | 18 | 19 | Good selection of low-priced "store" brand items | 37 | 37 | 37 |
| 10 | 18 | 20 | Good selection of nationally advertised brands | | | |

* = tie score.
NOTE: The three surveys were jointly conducted by Progressive Grocer and Home Testing Institute. Participants representing a cross-section of U.S. homemakers rated each characteristic on a six-point scale.

(Ref 8)

Cleanliness is an example of a factor that is considered to be an "environmental cost."

However, there are many factors on the Progressive Grocer list that would fall under indirect costs since they impact the amount of time it would take to shop for groceries. For example, if prices are not clearly marked, the amount of time spent shopping for groceries could be significantly increased if the shopper is concerned about prices. The "environmental costs" are addressed in this study only in terms of satisfactory and unsatisfactory aspects of shopping at the commissary. (See questions 38 thru 43 in Appendix A.)

Cost Model

The identification of the costs involved in shopping for groceries was an important step in developing a cost model.

Hypothesis and Considerations. It was decided to compare costs on a monthly basis since military personnel are paid either monthly or bimonthly. Also, a monthly time period may help smooth out variations in the grocery bill that could occur if a shorter period is used. For example, if a family that shops by the month is asked for a weekly estimate of their food bill, then their expense records may show that very little was spent for groceries for as many as four weeks in a row. Before many of the variables could be entered into the cost equations, estimates or actual values for the variables were needed. All of the variables under direct costs, with the exception of the tip, were

evaluated based on price comparison information. Mr. W. O. Thomas, the Wright-Patt commissary manager as of August, 1977, agreed that a 1% estimate for tipping would be a reasonable working figure (Ref 27). The 1% is used to effectively increase the size of the surcharge to 5% as Eq 1 on page 29 demonstrates. The 5% state sales tax is applied to the taxable products and included as a part of the shelf prices at the supermarkets for entry into the model.

Much consideration was given to assigning a value to the time spent shopping for groceries. De Vany points out that conventional theory of demand does not include the allocation of time of the consumer. A somewhat modified approach uses time as a good which is called leisure and the price of a unit of leisure is equal to the wage rate. "Leisure is time the consumer spends away from work." (Ref 6: 2) The wage rate would probably be appropriate if the consumer/survey participant were single and if the income elasticity of demand is not a significant factor, else one would have to consider time-independent income such as investment earnings. However, if the consumer is married, there are several theoretical complications that develop. In A Theory of Household Demand and Labor Supply, De Vany addresses the demand of time in the household and develops a theoretical model of how a husband and wife would possibly allocate their time based on the relative size of their wages, even if only one spouse works outside the home. (Ref 7: 5-10)

The task of theoretically assigning a value to time spent shopping for groceries was done considering only the income of the military member

since there was a lot of variance in who shops for groceries. For example, many indicated that both husband and wife shop for groceries or that the husband shops most of the time when he is also the only spouse with a job outside of the home. The wage rate, if used, could vary depending on perspective; to the individual commissary customer it could be that wage rate that is reflected in his take-home pay, to someone else it could be the wage rate that determines gross pay, or to the Department of the Air Force it could be the Composite Standard Rate published in Air Force Manual 177-101. The point is, however, that according to new economic theory time spent in consuming is important. Intuitively one would have to agree on the importance of time.

It is hard to separate the impact of satisfactory and unsatisfactory aspects into indirect costs which are generally time intensive and into what was arbitrarily called "environmental costs". These types of costs were not included in the model for two reasons. The main reason is that there seems to be no easy way to apply them in a cost model without asking questions such as these:

1. Between the commissary and the supermarket that you use most often, which one is cleanest?, least crowded?, has the friendliest and most helpful employees?, etc.
 - A. Commissary
 - B. Supermarket
 - C. The two are about the same in this area
2. Based on your answer to the question above, how much, in terms of an added percentage to the cost of your groceries, is it worth to shop at the cleanest (least crowded, the one having the friendliest and most helpful employees, etc.) of the two stores?
 - A. 0%, the two are about the same in this area
 - B. Less than 0.4%
 - C. 0.4% - 0.6%
 - D. 0.7% - 0.9%
 - E. 1.0% - 1.4%
 - F. More than 1.5%

Because it was thought that the survey should be reasonably short for the participants to fill out, a comparison of the commissary and supermarkets in the areas of satisfactory and unsatisfactory aspects was not made. The other reason is that in order to employ "environmental costs" in a model one would have to be very careful in using factors that affect both shopping time and personal preference. Crowding, for example, may increase shopping time but it is also a factor that influences personal preference. It seems unreasonable to think that these factors would not show up to some extent as double entries, under indirect costs and under costs assigned according to personal preference, such as in the second sample question on the previous page.

Formulating the Model. The next step in building a cost model is to integrate the appropriate costs into a set of equations that describe the costs incurred by shopping at the commissary and at the supermarket. If the cost of shopping at the commissary, C_c , is defined by Eq (1)

$$C_c = 1.05 * \sum_{i=1}^n (P_{c_i} \cdot Q_i) + (t_c \cdot N_c)w \quad (1)$$

*.04 for surcharge + .01 estimate for tipping

then the cost of shopping at the supermarket, C_s , is defined by

$$C_s = \sum_{i=1}^n (\bar{P}_{s_i} \cdot Q_i) + (t_s \cdot N_s)w \quad (2)$$

P_{c_i} is the shelf price of the i^{th} item in the commissary and Q_i is the quantity of the i^{th} item purchased. $\sum_{i=1}^n (P_{c_i} \cdot Q_i)$ is actually the total cost of the market basket based on shelf prices which is multiplied by 1.05. t_c is the total time that it takes to shop at the commissary per trip. N_c is the number of shopping trips per month to the commissary.

t_c times N_c gives the total time spent shopping for groceries at the commissary during one month. w is the value "assigned" to the time spent shopping.

Similarly, \bar{P}_{s_i} is the average price of the i^{th} item in the two supermarkets. Notice that in Eq (2) the state sales tax is considered to be a part of the shelf price of the items that are taxable while in Appendixes B and C the tax is added after the shelf prices are totaled. Q_i is the quantity of the i^{th} item purchased and $\sum_{i=1}^n (\bar{P}_{s_i} \cdot Q_i)$ is the total cost of the market basket based on shelf prices including sales tax.¹ t_s is the total time that it takes to shop at the supermarket each trip. N_s is the number of shopping trips per month to the supermarket. The total time spent shopping in the supermarket per month, $(t_s \cdot N_s)$, is multiplied by w , the "assigned" value of time, to provide an estimate of the cost for the time spent shopping for groceries.

The Survey Instrument. One purpose of the survey was to gather data that would help estimate the value of some of the variables in the cost equations. The first nine questions were included to provide an estimate of total family income which can help to "assign" a value to w . Questions 12 thru 15 gives an estimate of the total monthly grocery bill as well as values for N_c and N_s . The time elements, t_c and t_s , are estimated by using answers to questions 20, 22 thru 26, which will be explained in the next chapter.

¹ The Q_i 's could be the quantity weighting factors from the Department of Agriculture data.

Another purpose of the survey, which is as important as the first, is to gather information about what the individual thinks about the Wright-Patterson commissary in general terms and in terms of the "perceived" value of the commissary privilege. Feedback to questions 28 and 33 will be used to indicate the value of the commissary privilege from the point of view of active duty personnel stationed at Wright-Patterson Air Force Base. These "perceptions of value" will be compared with the estimated "values" which are generated by using the cost model.

Price Comparisons. A current percentage of savings that includes all of the direct costs of groceries is essential in determining the value of the commissary privilege from Eqs (1) and (2). The "weighted percentage of savings" is the percentage of savings that is calculated from the data in the price comparisons. Like all of the earlier price comparisons, the price comparisons which were done for this study are somewhat subjective in nature.

Two price comparisons were made for this thesis. The same two supermarkets were used in both. The first price comparison study, which was performed on Wednesday and Thursday, July 20 and 21, 1977, used a "unit" pricing approach. "Unit" pricing, in this case, means that the prices were compared using the weight, size, or amount upon which the prices are based. For example, the price of most meat items is priced per pound, so the first comparison study uses price per pound. There are some exceptions where the price is for a larger-than-unit

amount, as in a 10 pound bag of potatoes instead of 1 pound of potatoes.

The other price comparison study was done Tuesday, November 1, 1977, and used a probably weekly grocery list. Using a list of groceries which are intended for consumption during some period of time encourages the use of multiple units of some items. If a person is shopping for a family, then it would probably be unreasonable to compare the prices for one apple or even one pound of hamburger.

The basic equation for determining the percentage of savings is

$$\frac{\sum_{i=1}^n \left[\frac{P_{1i} + P_{2i}}{2} \cdot Q_i \right] - 1.05 \sum_{i=1}^n (P_{ci} \cdot Q_i)}{\sum_{i=1}^n \left[\frac{P_{1i} + P_{2i}}{2} \cdot Q_i \right]} \times 100 \quad (3)$$

Simplifying this by substituting \bar{P}_{si} , the average supermarket price for the i^{th} item, for $\frac{P_{1i} + P_{2i}}{2}$, which is the average of the shelf prices at store 1 and store 2 including the sales tax, the equation

becomes

$$\frac{\sum_{i=1}^n (\bar{P}_{si} \cdot Q_i) - 1.05 \sum_{i=1}^n (P_{ci} \cdot Q_i)}{\sum_{i=1}^n (\bar{P}_{si} \cdot Q_i)} \times 100 \quad (4)$$

These equations represent the difference between the direct costs of groceries at the supermarket and at the commissary. The difference is then divided by the direct costs of groceries at the supermarket and converted into a percentage. This differs from the way that the Air Force Commissary Service computes the percentage of savings since the surcharge, tip and sales tax are included in Eqs (3) and (4) while the

the Commissary Service uses only the shelf prices in calculating the percentage of savings.

The cost equations are an integral part of the analysis of the value of the commissary privilege in the next chapter. The essence of the computation of the value of the commissary privilege is to calculate C_c and C_s and to find the difference between the values of the two cost equations. The percentage of savings formula, Eq (4), is used in the two price comparisons to calculate a separate percentage of savings for each price comparison. From the two separate percentages of savings a "weighted percentage of savings" is derived for use in the cost analysis.

III. Data Collection

All of the data required for this study was obtained by developing a new and rather unique questionnaire which would best fit the situation at Wright-Patterson Air Force Base and by gathering and comparing prices at two area supermarkets and at the commissary. Because of the amount of data required and the lead time in getting a survey approved through the proper Air Force channels, the development of the survey and formulation of the first market basket was begun during the spring of 1977.

The Survey¹

The general purpose of the survey was to gather data that would define and describe the grocery shopping habits of the active duty military personnel stationed at Wright-Patterson. At the time that the survey was being developed there were several tentative areas under consideration to be explored by this study. The final scope of the study precluded the discussion of most of the peripheral issues, however.

Sampling. Table II presents the active duty manning at Wright-Patterson Air Force Base as of October 18, 1977, and also displays the size of the sample for each rank group, the number of usable surveys returned, and the return rate.

¹Before starting this section it is recommended that you familiarize yourself with the Commissary Survey in Appendix A.

Table II
Wright-Patterson Manning and Survey Sampling Data

| Rank | Total Assigned | Sample Size | Usable Returns | Return Rate |
|------------------|----------------|-------------|----------------|-------------|
| Colonel | 241 | 35 | 26 | .743 |
| Lt. Colonel | 551 | 35 | 30 | .857 |
| Major | 847 | 35 | 21 | .600 |
| Captain | 1752 | 35 | 30 | .857 |
| First Lt. | 276 | 30 | 18 | .600 |
| Second Lt. | 320 | 30 | 24 | .800 |
| Chief MSgt. | 62 | 35 | 19 | .543 |
| Senior MSgt. | 136 | 35 | 33 | .943 |
| Master Sgt. | 343 | 35 | 26 | .743 |
| Tech. Sgt. | 550 | 30 | 20 | .667 |
| Staff Sgt. | 888 | 30 | 20 | .667 |
| Sgt./Sr. Airman | 582 | 30 | 14 | .467 |
| Airman 1st Class | 692 | 30 | 13 | .433 |
| Airman | 170 | 30 | 11 | .367 |
| Airman Basic | 50 | 22* | 5 | .227 |
| Totals: | 7,460 | 477 | 310 | .650 |

* Would have violated the randomness of the selection process if a larger number were chosen

(Ref 28)

Mr. William Jarvis and his staff in the Personnel Systems Management Section at the Air Force Institute of Technology generated the sample utilizing the personnel computer and a program which provides randomness in the selection process. The surveys were distributed by mail to each individual in the sample through his military organization. The overall return rate was 65% which was substantially diminished by the bottom four enlisted ranks.

Reasons for Survey Questions. The final draft of the survey contained 43 questions. Each question was thought to be relevant to grocery shopping or of some potential value in shedding light on shopping habits. The first four questions were included in order to determine the income of the military member. Each rank has a separate pay structure and the years of service helps pinpoint base pay on a sliding scale as in the responses to question 2.

There are four categories in the military pay system, not including the miscellaneous benefits such as the commissary privilege and medical care. Base pay is the first category and is determined strictly by rank and years of service. The second category is the monthly quarters or housing allowance which is an incremented allowance based only on rank and marital status (with dependents).

The third category is the monthly subsistence allowance. All officers receive one amount (\$55.61 before October 1, 1977) and enlisted personnel receive a standard rate per day or are allowed to eat in a Government dining facility by forfeiting their subsistence allowance

(standard rate was \$2.65/day or \$79.50/month before October 1, 1977).

The last category is special pay and allowances, and the amount received varies with each type of special pay and usually depends on rank and years of service.

The question on the sex of the participant was included in order to determine which spouse was the military member. Knowing the sex of the military member also positively identifies who shops for groceries, question 16, with respect to whether or not the person who shops for groceries works outside of the home. Other types of family income and the time spent earning the income are the subject of questions 6 through 9. The amount of money spent on groceries, how often and where one shops are addressed in questions 10 through 17. The question on pre-school dependents was intended to help determine if having preschool dependents impacts on who shops for groceries. If special child care arrangements are made, the real cost of groceries could be affected. This was not analyzed and is an area for further study. There were only two respondents who said they received food stamps and these were two of the lower enlisted personnel with relatively large families.

There are at least two reasons for wanting to find out where the participant lives even in view of the fact that questions on time and distance from grocery shopping facilities are included. One reason is that these communities or residential areas are spread out all around the base and there may be more supermarkets in some areas than in others and the distribution of supermarkets could significantly impact grocery

shopping habits. The other reason is that families living in Government quarters [choices A, B, and C in question 18] are probably paying less for housing than those living elsewhere. This is especially true in the short run with high housing costs, the rising cost of utilities, and the relatively cold winters in Ohio. This would usually mean that families with the same income living on base would have more disposable income available to spend on groceries if they so desire than those who live off base.

The time and distance questions, 19 through 26, were included to help determine how these two factors influence shopping at the commissary. Even though the cost model for this study did not include a direct transportation cost, the distance questions could be used to estimate a direct transportation cost for the grocery shopper based on mileage. The value of the travel time to the customer is an indirect transportation cost.

In order to use an estimate for the direct transportation cost it might be necessary to know the age and model of the family car(s) and whether other stops are usually combined with a grocery shopping trip, such as going to work or to the base exchange, etc. There are two different elements of cost which could be included in a direct transportation cost: 1) a depreciation expense based on miles driven; 2) operating expense based on average gas mileage and average maintenance costs for the type(s) of car(s) driven. The survey was not designed to handle the direct transportation costs, but with the addition of two or three questions a reasonable estimate could be obtained from the survey data.

The value of time to the shopper is thought to be the most significant factor involving the actual cost of groceries other than the direct cost of the groceries themselves. Therefore, it is important to determine t_c and t_s , the total time it takes to shop at the commissary and at the supermarket. In terms of responses to questions in the survey, formulas for t_c and t_s would look like this:

$$\bar{t}_c = \frac{\sum_{i=1}^n (2 \times #20_i + #23_i + #24_i)}{n} \quad (5)$$

and

$$\bar{t}_s = \frac{\sum_{i=1}^n (2 \times #22_i + #25_i + #26_i)}{n} \quad (6)$$

The subscripts by the question numbers correspond to the responses by the i^{th} survey participant and n is the number of participants responding from each rank group. In some cases the n for Eqs (5) and (6) will not be the same n as usable surveys returned. One-way travel time to commissary and supermarket is requested in questions 20 and 22 and these times are doubled in order to find total travel time.

The impact of peak periods of commissary activity on the total time it takes to shop at the commissary is the subject of question 27. Relative to peak periods that may occur in the local supermarkets, the peak periods of activity at the commissary brought about by paydays and holidays seem to add more time to shopping at the commissary than the peak periods add at the supermarkets. The reasons for this are that the variance from normal activity appears to be larger in the

commissary during the peak periods and parking is not a problem at most supermarkets during normal or peak periods. A parking space is almost always hard to find at the commissary. The commissary at Wright-Patterson competes with the base exchange for parking and this is made even worse by the peak period activity. Another reason that peak periods add more time to shopping at the commissary is that the commissary store itself is relatively smaller than the two supermarkets in terms of floor space and especially in terms of the size of the aisles. In order to apply the responses to question 27 it would be necessary to scale the choices, A thru E, on a reasonable time basis, maybe 0 to 30 minutes, and add this time to the time it takes to shop at the commissary. This was not done and this dimension of time was not included in the analysis.

The estimated or "perceived" percentage of savings given by the survey participants in question 28 is used to compare with those estimates occasionally provided by the Air Force Times, and to calculate "perceived" values of the commissary privilege. Where one would shop if he did not shop at the commissary, question 29, was originally intended to be used to compare data from this survey with an informal survey of commissary customers which was done in 1976. This was later determined to be outside of the scope of this study and the data was not tabulated and the comparison was not made.

Questions 30 through 34, with the exception of question 33, were thought to be relevant to grocery shopping habits and were to be used

in a correlation analysis. The analysis was not done but the data from these questions could shed some light on questions such as these:

- (1) Do families with freezers tend to shop less often than families of the same size who do not have freezers?
- (2) What is the relationship between total monthly food bill (the size of the family, total family income, etc.) and the number of times per month a family has dinner guests?
- (3) What is the relationship between money spent dining out and total family income (size of the family, whether both spouses work, etc.)?

Another measure of the value of the commissary privilege is a "substitute" allowance in lieu of shopping at the commissary which is contained in the responses to question 33. The average allowance is an inflated figure as compared to the "perceived" values calculated when one uses the estimated percentage of savings given by the participants in question 28. A name brand preference question was asked since there may be some correlation between preferring name brands and where one shops for groceries. For example, since name brand goods in the commissary are priced more closely to the store brand goods, then a strong preference for name brand goods would provide more incentive to shop at the commissary. This hypothesis was not tested. One survey participant commented that "there is no nutritional value in labels" and this pragmatism is employed to some degree in the market baskets selected for this report.

Questions 35, 36, and 37 were intended to help explain why there is so much of a difference in the sales of produce as a percentage of total store sales (and to a lesser extent the meat sales) between the

commissary and the local supermarkets. Produce sales in the commissary usually average around 5% of total sales while one local supermarket estimated produce sales to be 8-9% of total sales (Ref 3; Ref 9). After the survey was distributed it was discovered that the supermarkets include more items under produce than the commissary does; live potted plants is an example. Also, questions 36 and 37 were the most difficult to answer, therefore, they were not used in the analysis.

The last six questions in the survey were included to address the "environmental costs" which were discussed in Chapter 2. These were not used in the cost model, but customer perception of his shopping environment is important and is under study by many consumer and marketing groups at the present time.

Criticism of Survey. Many of the problems or oversights in the survey instrument itself have been mentioned. Some of the problems were caused because the time available to develop the survey was constrained by the time it takes to get a survey approved, reproduced, addressed and distributed, and by the suspense date one has to provide for the survey participants. This tremendous lead time resulted in the inclusion of several questions which are not used in this report.

However, there are several oversights and inconsistencies in the survey which should be mentioned. The first oversight may have been the title of the survey. Only one officer returned the survey without filling it out and said that his family did not shop at the commissary. Many of the lower four enlisted ranks commented that the survey

did not apply to them since they live in the barracks and eat in the dining hall. Almost half of the respondents in the lower four enlisted ranks indicated that they lived in barracks and ate at the dining hall. Surveys which were returned unopened were common in these lower four enlisted ranks. Another general problem was that the surveys were distributed during the summer which is the season when most reassessments occur.

It would have been interesting to know the number of cars that the family has in order to better explain why some of the husbands shop at the commissary on the way home from work. If the wife does not work outside of the home, has transportation available, and the total time that it takes to shop for groceries is not unusually long, then according to DeVany, the wife would usually do the shopping. The convenience of not having to make an extra trip to shop for groceries may be sufficient to explain why husbands with non-working spouses sometimes do most of the grocery shopping. [Appendix E presents a summary of the survey data which is used in this study. Airmen Basic and Airmen were combined into a single group because of the small number of returns from each group and because all of the participants in both groups had less than two years of military service.]

Price Comparisons

There were two price comparisons for this study which were briefly discussed in Chapter 2.

First Price Comparison. (Appendix B) When the first price comparison was completed in July, 1977, the percentage of savings which was calculated was 5 - 7% lower than expected. The researcher and his wife had performed two or three cursory price comparisons during the winter and spring of 1977 and had established, within a reasonable range, what the percentage of savings should be. At first the large "unit price" comparison was suspect since the researcher and his wife had done their experimental price comparisons using family grocery lists with less than 40 items. However, it is now believed that the relatively small percentage of savings, based on the method of calculation used in this study, was due to 1) the price war in the supermarkets during the time that the first comparison was made and 2) the "practical" approach which was taken in comparing prices.

The grocery list used for the first price comparison was put together with reference to the list that the Air Force Commissary Service has been using for the last two years. The Commissary Service uses a large list of groceries and makes a "unit price" comparison. They are very staunch or legalistic in their requirement for each item to be the same quality and same brand in all of the stores. Occasionally the brand guideline is waived if the item is the same quality in all of the stores.

In order to obtain a large market basket for this study, the "unit price" comparison list started out with more than 200 items. Since all three facilities did not always carry the same brand for each

item, the price comparison often violated the "same brand" guideline in at least one of the supermarkets. The price comparison stuck to the "quality" guideline as much as possible. If the quality of an item was unknown/not available then a similar item was used for comparison purposes. This usually made it necessary to compare a name brand item in the commissary against a store brand in one or both of the supermarkets. This was where subjectivity or pragmatism came into play on the first price comparison. For example, if Green Giant frozen corn on the cob was not available in the two supermarkets but a store brand was available in one and Bird's Eye brand in the other, then the comparison was made using the two available brands.

The reasoning was that if a shopper has a specific item on his list and this exact item is not available in the store where he goes to shop, then he is most likely to substitute another like item rather than making a separate trip for one or more specific items. There may be exceptions to this reasoning, such as when a substitute is not available or where the shopper has had a "bad" experience with the substitute(s). Therefore, the first price comparison was completed with "not wanting to make another grocery shopping trip" philosophy. Had this not been done, the final size of a list containing the exact same items in all stores would have been about one half the size of the original list. The list for this price comparison shrank from 206 items to 163. The other alternative would have been to screen the stores beforehand in order to use only those items which were available in all three stores.

Second Price Comparison. (Appendix C) The second price comparison was done using a hypothetical weekly shopping list. This market basket is quantity weighted since more than one unit of a single item was often used in the comparisons. The price war and the liberal substitution of items were thought to have made the percentage of savings for the first comparison unusually low. This prompted a second price comparison which utilized same name brands and same quality to the maximum extent possible.

There were only a few occasions where the exact same item was not available in all three stores so the "same brand" guideline was closely adhered to and the same quality was always used. The percentages of savings provided by the two price comparison studies are weighted according to their individual dollar value. This "weighted percentage of savings" will be used in the cost model. The computation of the "weighted percentage of savings" is presented in the next chapter.

IV. Analysis

This study addresses the value of the commissary privilege to active duty military personnel at Wright-Patterson Air Force Base from two approaches. The first approach to the value of the commissary privilege will be to evaluate the relative costs involved in shopping at the commissary and at the supermarket. When the cost of shopping at the supermarket, C_s , is greater than the cost of shopping at the commissary, C_c , one would shop at the commissary. The shopper would use the supermarket when $C_c > C_s$, and when $C_s = C_c$ one would be indifferent. These comparisons include only direct costs plus the value of time. Other costs, such as "environmental" costs, have been discussed but are not included in the calculations of "values" of the commissary privilege.

The first approach involves the determination of the costs of shopping for groceries, C_s and C_c , for each rank group. The difference between costs, $C_s - C_c$, will be the prime measure of the value of the commissary privilege. The value of the commissary is discussed and evaluated by calculating four different "values" of the commissary privilege. These four "values" are compared to each other and to the average monthly allowance for each group.

The second approach will be to let the individual customer assign a value for w . Then based on his total times, t_s and t_c , and the estimated size (value) of his grocery list, the shopper can determine where to shop. Before the cost comparisons can be made the survey and price comparison data needs to be put into a more useful form.

Survey Data

The value assigned to time spent shopping, w, is somewhat arbitrary and probably should be addressed in depth by anyone who is interested in follow-on study in this area. Consideration should be given to the possibility that the shopper may not value his time shopping at the commissary at the same rate as time spent shopping at the supermarket. This situation may exist because of the unsatisfactory aspects that have been identified with the Wright-Patterson commissary.

The Hourly Composite Standard Rate from Air Force Manual 177-101 is the value assigned to w for this report. Reference Appendix D for the standard rates which correspond to the ranks surveyed in this study. (The appropriate enlisted ranks are identified as E-1 thru E-9 and the officers are O-1 thru O-6 in the Standard Rates Chart.) The standard rate for the combined group of Airmen Basic and Airmen was interpolated according to the number of returns from each group before they were combined. The rate used in the calculations of values is \$3.20 per hour. A check was made to determine how well the standard rates approximate the hourly wage rates of the surveyed rank groups. Even though the military pay is not based on an hourly wage, a standard 40 hour work week was used in the calculations.

For the groups which were checked, the standard rates provide a close approximation for gross military income as defined in terms of an hourly wage. For example, the hourly rate for first lieutenants was approximately \$7.66 and the standard rate is \$7.93, about a 3.5%

difference on the low side; the hourly rate for captains was approximately \$10.48 and the standard rate is \$10.33, about a 1.5% difference on the high side (Ref 1). The hourly rate for the survey participants included only the four major categories of military pay and paragraph 50204 in Appendix D gives the components of the standard rates.

The "weighted percentage of savings" is applied to the value of a given market basket in the commissary in order to obtain the value of the same market basket in the supermarket. This method of using a value for a market basket instead of a specific grocery list eliminates the requirement to know or estimate a Q_i for each item. What is used is an estimate for the value of the monthly market basket in the commissary, $1.05 \sum_{i=1}^n (P_{C_i} \cdot Q_i)$. The value of the "monthly market basket" for each rank group will be determined by multiplying the average family size times the monthly per capita food bill. For example, the colonels have an average family size of 4.1 and the monthly per capita food bill is \$69.80 which means that the "monthly market basket" for colonels is \$286.18.

The average family size for each group was rounded to the nearest tenth. The per capita monthly food bill was calculated by summing the total monthly food bill for every family in a group and dividing by the total number of people in the families of each group. The "monthly market basket" is figured by multiplying the average family size times the monthly per capita food bill. This introduces an error based on rounding the average family size, and to some extent the rounding of

the monthly per capita food bill, before they are multiplied. [The data used in these calculations are the averages from Appendix E.]

Since every rank group, on the average, spends a larger percentage of their food bill in the commissary, the "monthly market basket" which is calculated as described above is assumed to be a reasonable estimate for the value of the monthly food bill in the commissary. Information was not available to evaluate the monthly grocery bills of the two families who receive food stamps. The basic data provided by the survey was used for each family. Since they were in different rank groups it was assumed that this would not significantly bias the data. Also, all of the groups, except the E-5 group, had a monthly per capita food bill higher than the "average American" who spends approximately \$56 per month on food (Ref 10).

Using the colonels again, the "monthly market basket" of \$286.18 is used as an estimate of the value of the average monthly grocery bill based on total direct costs in the commissary which is $1.05 \sum_{i=1}^n (P_{ci} \cdot Q_i)$ in Eq (1). This method of selecting an average monthly market basket is somewhat arbitrary, but it is used to establish a basis for comparison. If the "weighted percentage of savings" were 20% then the value of "monthly market basket" (average monthly grocery bill) in the supermarket would be \$357.73, (\$286.18 \div .80).

The value of the commissary privilege is estimated using a "potential" value and an "actual" value. The "potential" value is calculated as if the average family spends all of their food bill in

the commissary as compared to spending all of it in the supermarket.

The "actual" value is calculated utilizing the average percentage that is spent outside of the commissary. For example, the colonels spend 33.4% of their food bill outside of the commissary on the average.

The "monthly market basket" in the commissary is \$95.58, 33.4% of the \$286.18. This means that the colonels as a group spend approximately \$190.60, (\$286.18 - \$95.58), in the commissary and \$95.58 outside of the commissary each month. The "actual" value of the commissary privilege is really only the savings generated by spending the \$190.60 in the commissary and not the entire \$286.18.

The total time spent shopping at the commissary, t_c , and at the supermarket, t_s , are given as the average of the times provided by the participants in each rank group in Appendix E. It was assumed that the in-store shopping time, the time it takes to select the items from the shelves, would be about the same in all of the stores involved. This may be a bad assumption since the aisles in the commissary are narrow and one-way. Also, crowding which seemed to be more prevalent in the commissary would tend to make the in-store shopping time greater at the commissary. This suggests that if one buys the same number of items in the commissary and in a supermarket that the amount of in-store shopping time is greater at the commissary.

There may be another problem in estimating total time spent shopping at the commissary since time spent getting the groceries from the store to the car seems to be longer at the commissary than at the

supermarket. This was not addressed in the survey. If the customer does not find a parking spot immediately in front of or beside the commissary, he is expected to bring his car to the loading zone in front of the commissary. Also, it often takes a few extra minutes for the bagboys to coordinate for the groceries to be taken out for the customer. At the supermarket the customer simply pushes his own groceries out to his car which is usually closer to begin with than at the commissary.

Another thing that may have diminished the accuracy of the total times spent shopping is that the choices for the check out time at both stores did not have a sufficiently long time period available in the selection of responses. The range of time for these questions should have been extended or else the participant should have been asked to specify. Unless a specific time was indicated a "more than 30 minutes" selection was treated as 30 minutes.

The same method was used to the responses to the check out time at the supermarket. Only a few of the participants selected the "more than 20 minutes" response for supermarket check out time, but there were many participants who selected the "more than 30 minutes" response for commissary check out time. Like the other time-related oversights, this would have tended to increase t_c relative to t_s .

However, the fact that most supermarket customers purchase a smaller market basket, as compared to the average commissary customer, may tend to offset the relative increases in t_c suggested by the oversights

just mentioned. The survey did not specify the size of the market basket in the question which asked for usual check out time at the supermarket. The smaller purchases at the supermarket may also mean that express lanes are routinely used and that cash is usually used to pay for groceries. Check approval time and the extra time it takes to pay by check are not explicit in the survey questions.

N_c , the number of trips to the commissary per month, and N_s , the number of trips to the supermarket per month, are the two remaining variables that are based on survey data. The way that N_c is evaluated in this study is to average the shopping trips per month for all of the participants in every rank group, which spend 95% - 100% of their food bill in the commissary. Their responses to question 17 would be 0% or 1% - 10%, choices A or B. The same method is used to evaluate N_s , except the responses came from the opposite end of the spectrum. When N_c and N_s were calculated, personnel who ate in the dining hall were not included since their purchases seem to be almost exclusively of incidental-type items. N_c is 2.81 trips per month and N_s is 3.14 trips per month. These estimates are to be used for every group in the calculations of "value" that follow in this chapter.

Originally it was thought that N_c and N_s would be equal. The average purchase at the commissary is approximately \$30 and the average purchase at the supermarkets is approximately \$12 (Ref 9; Ref 27). Loosely interpreted, this could indicate that if a family shops exclusively at the supermarket then they would tend to make 2.5 times the

number of trips to the store as compared to a similar family who shops at the commissary. Statistically this interpretation is faulty since knowing the average purchases does not provide the distributions for the purchases. However, it does suggest that a family would tend to shop less often if they use the commissary as compared to the supermarket. Also, the supermarkets have much longer operating hours than the commissary and this invites convenience-store shopping habits in the supermarkets. This has some effect on reducing the size of the average purchase in the supermarkets (Ref 9).

The average for "percent of monthly food bill spent outside of the commissary" for the 14 groups was approximately 30%. This means that for every \$10 spent on groceries, \$7 is spent in the commissary and \$3 outside of the commissary. Clearly, from the single question in the survey on "percentage of food bill spent outside of the commissary" one cannot say that the entire \$3 is spent at the supermarkets in light of the number of convenience food stores in the area and the Base Exchange and Exchange Annex stores available to the active duty personnel. However, for comparison purposes it will be assumed that the money not spent in the commissary is spent in the supermarket.

Since the convenience stores have higher prices, spending a portion of the food bill in them would effectively increase the percentage of savings at the commissary and therefore increase the real value of the commissary. It just so happens that the \$7 to \$3 ratio is almost perfect for describing the relative size of the average purchases in

the commissary and in the supermarket, (\$7 is to \$3 approximately as \$30 is to \$12).

Price Comparison Data

The main reason for the two price comparisons was to obtain a current percentage of savings which would be applicable to Wright-Patterson. In Appendixes B and C, the two price comparisons, there are two percentages of savings for each study. The two which are denoted by an "A" are the ones which include all of the direct costs of groceries. They are the easiest to apply in the cost equations when going from the value of a market basket in the commissary to the value in the supermarket.

The two "A" percentages are 11.1% and 19.21%. The smallest percentage of savings is thought to be more appropriate where the shopper is "value" conscious; that is, he is trying to minimize cost per serving. There is some allowance in the first comparison study for those occasions where the "value" purchases (usually store or second brands) are not as favorable as name brands. The percentage of savings from the study utilizing "unit" prices and a large list is thought to be lower than usual by a percent or two because of the price war in the area during the time that the data was collected. However, since there is no data available to make the proper corrections this study will use the 11.1% and weight it with the 19.21% from the second study.

The larger percentage of savings from the second price comparison is that percentage of savings that could be expected if the shopper strictly prefers name brands. The first price comparison had a grocery list which was 2.5 times as expensive as the second grocery list. (It is 2.55 times as large using commissary prices and 2.32 using average supermarket prices.) Therefore, the "weighted percentage of savings" is going to be used in this report and is calculated like this:

$$\frac{2.5(11.19) + 19.21}{3.5} = \underline{13.48\%}$$

13.5% will be used in the calculations as the "weighted percentage of savings".

Value of the Commissary Privilege

Table III presents the value of the commissary privilege in terms of "actual" value and "potential" value for each of the 14 groups. The colonels will again be used to demonstrate the method of calculating the two values.

"Actual" Value:

$$C_c = \$190.60 + (.88 \times 2.81) 17.39 = \$233.60$$

\$190.60 is derived by multiplying the average family size, 4.1, times per capita monthly food bill, \$69.80, and subtracting 33.4% of this product. Colonels spend 33.4% of their grocery bill outside of the commissary. t_c is .88 hours. N_c is 2.81 hours. \$17.39 is the hourly standard rate.

$$C_s = \frac{190.60}{(1 - .135)} + (.49 \times 3.14) 17.39 = \$247.10$$

The \$190.60 is translated into supermarket prices by dividing by .865, one minus "weighted percentage of savings", $(1 - .135)$. $t_s = .49$ hours and $N_s = 3.14$.

$$C_s - C_c = \$13.50 = \text{"Actual" Value}$$

"Potential" Value

$$C_c = 286.18 + (.88 \times 2.81) 17.39 = \$329.18$$

Entire food bill spent in commissary; no correction made for percent spent outside of commissary.

$$C_s = \frac{286.18}{.865} + (.49 \times 3.14) 17.39 = \$357.60$$

$$C_s - C_c = \$28.42 = \text{"Potential" Value}$$

If the same "potential" and "actual" value calculations are repeated using the average for the estimated percentage of savings for each group, one could check "perceived potential" value and "perceived actual" value against the calculated "potential" value and "actual" value which were derived by using the "weighted percentage of savings". For example, the colonels estimated the percentage of savings to be 16.2%. In the calculations of the "perceived" values the value of the market basket in the commissary is divided by .838, $(1 - .162)$, instead of by .865 in order to derive the value in the supermarket.

This report not only wanted to evaluate the value of the commissary privilege to active duty military personnel in general terms but also wanted to provide a method that individual shoppers can use to determine where to shop. The best way to make a decision as to where to shop seems

Table III

Monthly "Values" of the Commissary Privilege

| Rank | "Actual" | "Potential" | "Perceived Actual" | "Perceived Potential" | Allowance |
|----------|----------|-------------|--------------------|-----------------------|-----------|
| O-6 | \$13.50 | \$28.42 | \$20.71 | \$39.24 | \$64.57 |
| O-5 | 8.51 | 20.61 | 11.29 | 24.43 | 66.25 |
| O-4* | -1.92 | 13.92 | -1.00 | 15.52 | 52.14 |
| O-3 | 5.09 | 13.91 | 6.50 | 15.85 | 60.69 |
| O-2 | 3.02 | 10.82 | 1.87 | 9.13 | 41.76 |
| O-1 | 3.57 | 8.86 | 3.48 | 8.72 | 37.92 |
| E-9 | 13.09 | 21.62 | 15.24 | 24.35 | 58.95 |
| E-8 | 15.28 | 22.84 | 14.74 | 22.17 | 70.16 |
| E-7 | 16.12 | 23.88 | 21.25 | 30.37 | 65.77 |
| E-6 | 17.27 | 27.75 | 14.56 | 24.07 | 84.25 |
| E-5 | 4.89 | 17.17 | 3.16 | 14.09 | 85.88 |
| E-4 | 3.59 | 16.91 | 0.12 | 8.74 | 73.57 |
| E-3 | 7.52 | 15.06 | 4.43 | 9.56 | 46.92 |
| E-1&2 | 11.23 | 13.89 | 8.89 | 11.10 | 50.71 |
| (1) Avg: | \$8.63 | \$18.26 | \$8.95 | \$18.38 | \$61.40 |
| (2) Avg: | \$6.60 | \$16.98 | \$6.64 | \$16.62 | \$63.14 |
| (3) Avg: | \$9.04 | \$18.75 | \$9.85 | \$19.68 | \$62.08 |

(1) equal weights are given to each group; n = 14

(2) weighted according to the total number assigned to the base in each rank group with respect to the total number of active duty personnel; n = 7,460 (from Table II)

(3) weighted according to the number of usable returns from each group with respect to total returns; n = 310 (from Table II)

* The negative "values" are caused by a relatively high w, a much larger t_w with respect to t_s, and a high percentage of the food bill spent outside of the commissary.

to be to take each shopping trip and consider it separately. Most of the variables in the cost equations for this approach are determined by the individual shopper.

To start with, the shopper needs to estimate how much she or he will spend on groceries for this one trip. For demonstration purposes a \$50 market basket will be used for the total direct costs in the commissary. Next the individual will have to determine the difference in the total time it takes to shop at the commissary and the supermarket. This time difference is situational in that it may depend on peak period activity in the commissary, the time of day a person chooses to go shopping, etc. It may be necessary to reconsider the time difference for every shopping trip based on the circumstances of each trip.

If the shopper uses the weighted percentage of savings of 13.5% from this study, then the value of the hypothetical \$50 market basket in the commissary becomes \$57.80, ($\$50 \div .865$), in the supermarket. The selection of a "personal" percentage of savings is another example of where the individual can make a choice. Within a relevant range, the percentage of savings can be determined by the shopper. This range is probably from approximately 12% to 20% based on personal preference and shopping habits. The 12% to 20% range includes all of the direct costs. If a shopper chooses to buy only name brands then a higher percentage of savings can be realized; of course the shopper will have to pay more for an "all-name-brand market basket".

The shopper should have some idea of how he values his time.

This personal value for w will undoubtedly change according to the relative scarcity of money and the demand on the time of the shopper. This especially true around payday; the time it takes to shop at the commissary increases significantly. The lower income military personnel, and those who have their income otherwise committed, have a relative abundance of money around payday and in spite of the increase in shopping time at the commissary, choose to shop there anyway during peak activity. However, the increase in shopping time during peak periods drives many away who otherwise shop at the commissary.

There are situational factors that may change w.¹ For example, if a birthday or anniversary is coming up and the family budget does not permit the purchase of a worthy gift, then the shopper may elect to shop at the commissary, regardless of the time involved, in order to have the extra money available. The shopper who is budget conscious may also adjust shopping habits in order to maximize the percentage of savings while at the same time minimizing the amount of money spent on groceries.

The next step is to set the two equations equal to each other and solve for w:

$$C_s = C_c$$

$$\sum_{i=1}^n (\bar{P}_{s_i} \cdot Q_i) + (t_s \cdot N_s)w = 1.05 \sum_{i=1}^n (P_{c_i} \cdot Q_i) + (t_c \cdot N_c)w$$

¹According to economic theory the value of w would stay the same and the individual would only choose to maximize some other factor(s) in his utility function.

Substituting what is known or assumed from the preceding discussion and by letting $t_c = 1$ hour and $t_s = .5$ hours, the equation becomes:

$$\$57.80 + (.5 \times 1)w = \$50 + (1 \times 1)w,$$

$$w = \$15.60/\text{hour} \quad (\text{in this example})$$

If the shopper places a value on time which is greater than the w which is calculated in this manner then the supermarket is the best choice and the commissary is the best choice if the personal value of time is less than w . Shopping at the commissary does not always have to take more time than at the supermarket, but that is generally the case at Wright-Patterson.

There is another way that the individual can use the cost equations to determine where to shop. The reasoning behind this view is why a shopper usually buys incidentals at the nearest store. In this case, the shopper does not know the cost of the items on the grocery list but knows a personal value for w , say \$10/hour. Set the equations equal to each other and find the value of the market basket. Let X be the value of the market basket in the commissary which means the value in the supermarket is $X \div .865$. Using the 13.5% savings and $t_c = 1$ hour and $t_s = .5$ hours:

$$\frac{X}{.865} + (.5 \times 1) 10 = X + (1 \times 1) 10$$

$$X = \$32.05$$

This means, in this example, that the value of the market basket at the commissary would have to be at least \$32.05 in order for the

shopper to choose to shop at the commissary in lieu of the supermarket.

The individual can also incorporate the "environmental" costs into the preceding analyses. This could be done by adjusting the "personal" w or by considering each factor or aspect separately. Table IV provides the ranking of the satisfactory and unsatisfactory aspects of shopping at the commissary.

The satisfactory and unsatisfactory aspects of shopping at the commissary were ranked separately by giving 3 points for every most satisfactory or unsatisfactory aspect selected by the survey participants, 2 points to the second most and 1 point to the third most. The points for each aspect were summed, including any write-in choices which are indicated by (other) in Table IV, and the aspects were ranked in order of total points. Many of the survey participants indicated that price was the only satisfactory aspect of shopping at the commissary and this would have placed "none other than price" as the second most satisfactory aspect. The total points given, which are to the right of each aspect in Table IV, do not necessarily correspond to the total number of usable surveys returned since some participants did not fill this section out completely because they "do not shop at the commissary" or because all of the surveys did not have all three choices selected for the satisfactory and unsatisfactory aspects.

The survey requested additional comments from the military members and their spouses. Appendix F contains a summary of the additional comments. The comments are almost completely in their original form

Table IV

Ranking of Satisfactory and Unsatisfactory
Aspects of Shopping at the Commissary

Satisfactory Aspects

1. Prices 766
2. Selection of groceries 172
3. Convenience 161
4. Ease of check approval 109
5. Quality of meat 86
6. Bagboys to help with groceries 77
7. Well stocked shelves 55
8. Quality of produce 49
9. Clearly marked prices 28
10. Pleasant and helpful employees 12
11. Delicatessen (Other) 4
12. Fast checkers (Other) 2
13. Cleanliness (Other) 1

Unsatisfactory Aspects

1. Waiting lines to check out 456
2. Generally an unpleasant, crowded environment 373
3. Parking 249
4. Waiting lines to get in 185
5. Checkout lines frequently block aisles 123
6. Store layout and size of aisles 98
7. Poorly stocked shelves 66
8. Unpleasant and discourteous employees 56
9. Quality of meat 38
10. Prices not clearly marked 25
11. Tipping 18
12. Quality of produce 16
- *13. Selection of groceries 10
- *14. Inconvenient (Other) 10
15. Discourteous shoppers (Other) 9
16. Display of items 6
17. Incompetent bagboys (Other) 5
18. Children in commissary (Other) 3
19. Long delicatessen lines (Other) 2
20. Poor store management (Other) 1

* indicates tie

but the grammar and verbiage have been cleaned up for publication.

The comments seem to mirror the unsatisfactory aspects of shopping at the commissary.

There are several things to keep in mind in reference to this analysis of the value of the commissary privilege. The first thing is that this report dealt with a specific commissary in one state. The estimated values apply only to the active duty military personnel stationed at Wright-Patterson Air Force Base. In the price comparisons which were done for this report the tip more than offsets the state sales tax. If Ohio had a general sales tax of 5% that applied to groceries, as many states do, then the "weighted percentage of savings" would be increased by 5%. The 5% general sales tax would not affect the cost of groceries in the commissary but would increase the cost of groceries in the supermarket which increases the value of the commissary privilege.

Another thing about this study is that Wright-Patterson is incorporated into the community; it is more of an extension of the community than most bases. If the base were more isolated then the value of time spent shopping may be reversed since the active duty personnel tend to live close to or on base in the more isolated areas.

V. Conclusions and Recommendations

Conclusions

This study has exposed several questions that were not discussed in this report, yet the methodology and the survey data provide the basis for further study of the value of the commissary privilege. There were some unexpected discoveries from the survey data. The first discovery is that the military personnel at Wright-Patterson Air Force Base do not seem to believe the reports on the percentages of savings that have been published. The average estimated or "perceived" percentage of savings for the 14 groups was 13.1% while the reported percentages have ranged from 1% to 25%.

The survey participants could have included some additional direct costs other than the shelf prices in their estimates since the question in the survey only asked for an estimated percentage of savings. "Environmental" and indirect costs may have been included to some extent in their estimates. It is also interesting to note that the colonels had the highest estimated percentage of savings, 16.2%. The reason for a high estimate could have been that 11 of the 26 colonels live on base near the hospital which is the most convenient location for shopping at the commissary and this relative convenience was translated into a higher percentage of savings.

Another discovery that was somewhat unexpected was the small "actual" value of the commissary privilege. Even with arbitrary values for some of the variables, the "actual" value calculations in this report are

thought to provide a reasonable estimate of the real value of the commissary privilege at Wright-Patterson Air Force Base. The monthly allowance required to replace the commissary privilege was surprisingly high in view of the relatively small "actual" value and the small estimated percentage of savings given by the participants.

There were two contrasting statements given by a senior enlisted participant and a senior officer participant on returned surveys. The enlisted member stated that the additional allowance should be tax-free and the officer suggested that the allowance be added to base pay. A tax-free allowance would increase disposable income more than if it were added to the base pay, which is taxable income.

However, military retirement pay is calculated solely on the basis of base pay. Therefore, what the two statements may suggest is 1) that senior officers have a longer planning horizon because their present income is relatively adequate and 2) that senior enlisted personnel may not be paid adequately in spite of reports to the contrary from previous administrations.¹ One could speculate as to why the allowance is inflated as compared to other values of the commissary privilege. It could be that most of the participants have relied on the commissary more extensively at previous bases than at Wright-Patterson and plan to rely heavily on the commissary at future bases of assignment. It could

¹The Third Quadrennial Review of Military Compensation reported that an estimated 3% of all military households are eligible for food stamps (Ref 11).

mean that the participants are imputing value based on the traditional military benefit. Another possibility is that the participants are expecting a change in commissary operations that would diminish its value and want to go on record as having highly valued the traditional commissary privilege.

The requested appropriated funds for commissary salaries for Fiscal Year 77 was \$312 million (Ref 17). There were 1.7 million families who were eligible to shop in military commissaries according to a report on commissary funding in the House of Representatives in 1976 (Ref 12). This means that it costs the American taxpayers approximately \$183.53 per year per family, or \$15.29 per month per family, to support all military commissaries. Part of this expense may be justified since the commissaries also provide employment for approximately 27,000 workers.

The expense of appropriated funds for an "actual" value to each military family of approximately \$10 per month does not seem to be cost effective. However, if the assumption is made that it will take approximately \$60 per family per month, the average monthly allowance in this report, to replace the present commissary benefit then the expense of appropriated funds may be cost effective. The preceding discussion is assuming that the value of the commissary privilege at Wright-Patterson is appropriate for the value for every family who is eligible to shop at military commissaries. Obviously this is not the case and data is not available that would provide an average value.

Recommendations

Wright-Patterson is to start construction of new commissary facilities within the next year or so, but with the present restrictions on operating hours a new store may be a source of disappointment and frustration to commissary customers. The present personnel policies which severely restrict the commissary to a high percentage of full-time employees have proven to be inefficient and have brought many commissaries to the point of being ineffective (Ref 24: 4-1 - 4-7).

It is estimated that if all of the military commissaries were allowed to have 60% full time and 40% other than full time employees then a savings of more than \$15.7 million per year could be realized. This could also mean that with the present level of appropriated funds and a 60/40 employee ratio that the commissaries would be able to establish longer operating hours which would help solve many of the chronic problems. This would especially be true in inadequate facilities such as the Wright-Patterson commissary. According to the 1975 study of military commissaries most military commissaries are inadequate (Ref 24).

It is recommended that a study of new, uncongested commissaries be done in order to compare customer perceptions with this or other similar studies of small, congested stores. It would also be interesting to know the change in commissary sales and customer perceptions in a commissary such as the one at Wright-Patterson if it were allowed to establish significantly longer operating hours with a sufficient number of employees to provide adequate service. Since this does not appear to be in the realm of the possible there may be several things that the

Wright-Patterson commissary can do to improve service and minimize dissatisfaction.

One could go down the list of unsatisfactory aspects of shopping at the commissary and make recommendations for improving the situation. If one of the objectives of the local commissary is to maximize the value of the commissary to its customers, then it must 1) increase the percentage of savings, 2) increase/maximize utilization, 3) minimize "environmental" costs and 4) reduce total shopping time. Improvement in any one of the areas would increase the real value of the commissary privilege. Vast improvement in all four areas is probably not possible considering the present restrictions on operations, but slight improvement in all/some areas may significantly increase the value of the commissary privilege.

The commissary cannot reduce prices but it can actively seek to educate customers as to "best buys". "Best buys" are usually second labels from major food processors and many customers do not recognize the quality or brand association. Modification of shopping habits to include more "best buys" would reduce the food bill of the customer. Customer education on "best buys" is being done to some extent in the store itself at Wright-Patterson, but there are other mediae that should be utilized. The base newspaper is perhaps the best source of information to the general military population in the area. The Air Force Times could be used in a more effective manner from the headquarters level.

This study estimates that the active duty military personnel spend

more than 30% of their food bill outside of the commissary. In order to reduce outside spending it will be necessary to improve/disprove customer perceptions of the commissary store, employees and management. There are several ways to do this, and the shopper education previously mentioned may be a good place to start.

Increased utilization should be the result of a reduction in the "environmental" costs. For example, parking is ranked third in the unsatisfactory aspects of shopping at the Wright-Patterson commissary. Perhaps this could be addressed by staggering the hours of commissary operation so as to minimize the competition and conflict with the Base Exchange for the available parking.

Potentially, the most profitable area in increasing the value of the commissary is in the area of reducing shopping time. Most of the top-ranked unsatisfactory aspects in Table IV are time related. Reducing the time that it takes the customer to shop at the commissary may be best approached by dividing the shopping time into increments. Improving the parking situation through staggered hours may be a way to reduce the increment of time in finding a parking space as well as the increment of time in getting the groceries from the store to the car.

There are some unanswered questions in this study that others may want to address, not only at Wright-Patterson Air Force Base, but also at other military installations. However, the value of the commissary privilege should be addressed in a more complete analysis in light of the apparent growing pressure to change commissary operations. Such an

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analysis would be helpful in the selection of a course of action; either to keep the commissaries as they are or to significantly change them.

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Appendix A

Commissary Shopping Survey

COMMISSARY SHOPPING SURVEY

This survey has been designed to gather data that will define the grocery shopping habits of Wright-Patterson personnel. The data collected from survey returns will be analyzed and discussed in a thesis by Capt. George Boyd, an AFIT graduate student in Systems Management. One of the central issues of the thesis is who benefits from the commissary privilege and what is the value of the benefit. The Air Force Commissary Service has expressed interest in the findings of this study, and the commissary here at Wright-Patterson may be able to use the feedback to improve service to its customers.

Your name was randomly selected from the listing of assigned personnel. No attempt will be made to associate an individual with a survey and your anonymity is guaranteed. The questionnaire should take approximately 20 minutes to fill out; please be as accurate as possible but do not take an undue amount of time. (Consulting one's spouse is encouraged.) Your participation is voluntary and very much appreciated.

PLEASE PLACE THE COMPLETED SURVEY IN THE ENCLOSED SELF-ADDRESSED ENVELOPE AND PUT IT IN THE BASE MAIL DISTRIBUTION.

USAF SCN 77-141 (Expires 31 December 1977)

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority

(1) 5 U.S.C. 301, Departmental Regulations: and/or

(2) 10 U.S.C. 80-12, Secretary of the Air Force, Powers and Duties, Delegation by.

b. Principal purposes. The survey is being conducted to collect information on the commissary shopping habits of active duty personnel assigned to Wright-Patterson A.F.B.

c. Routine Uses. The survey data will be converted to information that will help determine the value of the commissary benefit to Wright-Patterson personnel. Results of the research based on the data provided, will be included in written Master's thesis and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or orally presented, will be unlimited. Results of the survey, along with a final copy of the thesis, will be forwarded to the commissary officer at Wright-Patterson Air Force Base.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects to participate in any or all of this survey.

COMMISSARY SHOPPING QUESTIONNAIRE

Instructions:

Please circle the letter corresponding to the appropriate response and fill in the information where necessary.

1. What is your present active duty grade?

| | |
|---------------------------|-----------------------|
| A. Colonel | I. Master Sergeant |
| B. Lieutenant Colonel | J. Technical Sergeant |
| C. Major | K. Staff Sergeant |
| D. Captain | L. Sergeant |
| E. First Lieutenant | M. Senior Airman |
| F. Second Lieutenant | N. Airman First Class |
| G. Chief Master Sergeant | O. Airman |
| H. Senior Master Sergeant | P. Airman Basic |

2. How many years of active military service have you completed?

| | |
|--------------|------------|
| A. 2 or less | H. Over 12 |
| B. Over 2 | I. Over 14 |
| C. Over 3 | J. Over 16 |
| D. Over 4 | K. Over 18 |
| E. Over 6 | L. Over 20 |
| F. Over 8 | M. Over 22 |
| G. Over 10 | N. Over 26 |

3. In addition to your normal military pay and allowances what special pay do you receive?

| | |
|----------------------------|--|
| A. None | |
| B. Flight | |
| C. Medical | |
| D. Dental | |
| E. Proficiency | |
| F. Hazardous duty | |
| G. Other (Please specify.) | |

4. What is your marital status?

| | |
|--------------|--|
| A. Single | |
| B. Married | |
| C. Divorced | |
| D. Separated | |
| E. Other | |

5. What is your sex?

- A. Male
- B. Female

6. If your spouse works, what is his/her average monthly takehome pay?

- A. Not applicable
- B. \$100 or less
- C. \$101 - \$300
- D. \$301 - \$500
- E. \$501 - \$700
- F. \$701 - \$900
- G. \$901 - \$1100
- H. Over \$1100 (Please indicate the approximate amount.)

7. How many hours per week does your spouse work?

- A. Not applicable
- B. Less than 10 hours
- C. 10 - 20 hours
- D. 21 - 30 hours
- E. 31 - 40 hours
- F. More than 40 hours

8. Do you hold a second job?

- A. No

Yes, I work at my second job

- B. Less than 5 hours per week
- C. 5 - 10 hours per week
- D. 11 - 20 hours per week
- E. 21 - 30 hours per week
- F. Over 30 hours per week

9. Do you have additional income other than your military pay?
(Include second jobs, investment earnings, etc.)

- A. No

Yes, and the monthly average of all extra income is:

- B. Less than \$25
- C. \$25 - \$100
- D. \$101 - \$200
- E. \$201 - \$400
- F. Over \$400 (Please indicate the approximate amount.)

10. Including yourself, how many dependents are in your household?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5
- F. 6
- G. 7
- H. 8 or more (Please indicate the number.)

11. How many preschool dependents do you have?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4 or more

12. Do you receive food stamps?

- A. Yes
- B. No

13. Except for incidentals, how often does your family shop for groceries?

- A. Weekly
- B. Every two weeks
- C. Every three weeks
- D. Monthly
- E. Other (Please indicate the number of days between shopping trips.)

14. On the average, how much does your family spend on groceries during the time period you circled in the question above?

| | |
|-----------------------------|---|
| A. I eat in the dining hall | K. \$106 - \$115 |
| B. \$15 - \$25 | L. \$116 - \$125 |
| C. \$26 - \$35 | M. \$126 - \$145 |
| D. \$36 - \$45 | N. \$146 - \$165 |
| E. \$46 - \$55 | O. \$166 - \$195 |
| F. \$56 - \$65 | P. \$196 - \$225 |
| G. \$66 - \$75 | Q. \$226 - \$255 |
| H. \$76 - \$85 | R. \$256 - \$285 |
| I. \$86 - \$95 | S. Over \$285 (Please indicate the approximate amount.) |
| J. \$96 - \$105 | |

15. Excluding incidentals that you normally buy during major grocery shopping trips, how much does your family spend on incidentals such as bread and milk each month?

- A. Less than \$10
- B. \$10 - \$20
- C. \$21 - \$30
- D. \$31 - \$40
- E. Over \$40 (Please indicate the approximate amount.)

16. Who does the grocery shopping most of the time?

- A. I do, I am not married
- B. Wife
- C. Husband
- D. Both
- E. Other

17. Including incidentals like bread and milk, what percent of the total monthly grocery bill does your family spend outside of the commissary? (Do not include dining out.)

- A. 0%
- B. 1% - 10%
- C. 11% - 20%
- D. 21% - 30%
- E. 31% - 40%
- F. 41% - 50%
- G. 51% - 60%
- H. 61% - 70%
- I. 71% - 80%
- J. 81% - 90%
- K. 91% - 100%
- L. 100%, we always shop at other supermarkets

18. Where do you live?

- A. On base near the hospital
- B. Woodland Hills
- C. Page Manor
- D. Fairborn
- E. Huber Heights
- F. Rona Hills
- G. Beavercreek
- H. Kettering
- I. Enon
- J. Other (Please specify.)

19. How far is the commissary from your house?

- A. Less than 5 miles
- B. 5 - 10 miles
- C. More than 10 miles

20. How long does it normally take to get to the commissary from your house?

- A. 5 minutes or less
- B. 6 - 15 minutes
- C. 16 - 25 minutes
- D. 26 - 35 minutes
- E. More than 35 minutes

21. How far is the nearest supermarket that your family uses from your house?

- A. Less than 5 miles
- B. 5 - 10 miles
- C. More than 10 miles

22. How long does it normally take to get to the "nearest supermarket" referenced in question 21?

- A. 5 minutes or less
- B. 6 - 15 minutes
- C. 16 - 25 minutes
- D. 26 - 35 minutes
- E. More than 35 minutes

23. After arriving at the base, how long does it normally take to park, get into the commissary and start shopping?

- A. 5 minutes or less
- B. 6 - 10 minutes
- C. 11 - 15 minutes
- D. 16 - 20 minutes
- E. More than 20 minutes

24. How long does it usually take to check out at the commissary?

- A. 5 minutes or less
- B. 6 - 10 minutes
- C. 11 - 15 minutes
- D. 16 - 20 minutes
- E. 21 - 25 minutes
- F. 26 - 30 minutes
- G. More than 30 minutes

25. How long does it normally take to park and start shopping at a supermarket?

- A. 5 minutes or less
- B. 6 - 15 minutes
- C. 16 - 25 minutes
- D. 26 - 35 minutes
- E. More than 35 minutes

26. How long does it usually take to check out at a supermarket?

- A. 5 minutes or less
- B. 6 - 10 minutes
- C. 11 - 15 minutes
- D. 16 - 20 minutes
- E. More than 20 minutes

27. How do the peak periods of activity at the commissary brought about by paydays and holidays impact the total time it takes for you to shop at the commissary?

- A. Not applicable, we do not shop at the commissary
- B. No impact, we avoid shopping at the commissary during the peak periods
- C. Minimal impact, we seldom shop at the commissary during the peak periods
- D. We frequently shop at the commissary during peak periods but consider the additional time and inconvenience to be reasonable
- E. We frequently shop at the commissary during peak periods and consider the additional time and inconvenience to be unreasonable

28. In your opinion, what is the percentage of savings by shopping at the commissary?

- A. Less than 10%
- B. 10% - 15%
- C. 16% - 20%
- D. 21% - 25%
- E. 26% - 30%
- F. 31% - 35%

29. If prices at other stores were comparable to the commissary, where would your family shop?

| | |
|---------------|-----------------------------|
| A. Commissary | E. Imperial Foodtown |
| B. Kroger | F. Stump's |
| C. Liberal | G. Fazio's |
| D. IGA | H. Other (Please indicate.) |

30. Do you have a freezer at home?

- A. Yes
- B. No

31. How many times a month do you have dinner guests?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4
- F. Other (Please specify frequency.)

32. How much does your family normally spend dining out each month?
(Include meals purchased while at work, shopping, etc.)

- A. \$10 or less
- B. \$11 - 20
- C. \$21 - \$30
- D. \$31 - \$40
- E. \$41 - \$50
- F. \$51 - \$75
- F. More than \$75 (Please indicate the approximate amount.)

33. If you had the choice of receiving a monthly allowance rather than shopping at the commissary, how much would the allowance have to be?

- A. \$0
- B. \$10
- C. \$20
- D. \$30
- E. \$40
- F. \$50
- G. \$60
- H. \$70
- I. \$80
- J. More than \$80 (Please indicate the amount.)

34. Do you prefer name brands to store brands?

- A. Yes
- B. No
- C. Indifferent

35. Does your family routinely and selectively shop for special items at stores other than the commissary? (For example, you may shop at store X for produce, store Y for meat, and at the commissary for all other items.)

A. No

Yes, there are some items that we buy almost exclusively at other stores, and the major items we buy elsewhere are:

- B. Produce
- C. Meat
- D. Milk and dairy products
- E. Other, (Please specify.)

36. What percent of your total food bill is spent on produce?

- A. 0% - 3%
- B. 4% - 6%
- C. 7% - 10%
- D. 11% - 13%
- E. 14% - 15%
- F. 16% - 18%
- G. 19% - 21%
- H. Over 21%

37. What percent of your total food bill is spent on meat?

- A. 0% - 5%
- B. 6% - 10%
- C. 11% - 15%
- D. 16% - 20%
- E. 21% - 25%
- F. 26% - 30%
- G. 31% - 35%
- H. Over 35%

38. What is the most satisfactory aspect of shopping at the commissary?

- A. Prices
- B. Convenience
- C. Selection of groceries
- D. Quality of meat
- E. Quality of produce
- F. Clearly marked prices
- G. Pleasant and helpful employees
- H. Well stocked shelves
- I. Ease of check approval
- J. Bag boys to help with groceries
- K. Other (Please indicate.)

39. What is the second most satisfactory aspect of shopping at the commissary?

- A. Prices
- B. Convenience
- C. Selection of groceries
- D. Quality of meat
- E. Quality of produce
- F. Clearly marked prices
- G. Pleasant and helpful employees
- H. Well stocked shelves
- I. Ease of check approval
- J. Bag boys to help with groceries
- K. Other (Please indicate.)

40. What is the third most satisfactory aspect of shopping at the commissary?

- A. Prices
- B. Convenience
- C. Selection of groceries
- D. Quality of meat
- E. Quality of produce
- F. Clearly marked prices
- G. Pleasant and helpful employees
- H. Well stocked shelves
- I. Ease of check approval
- J. Bag boys to help with groceries
- K. Other (Please indicate.)

41. What is the most unsatisfactory aspect of shopping at the commissary?

- A. Parking
- B. Waiting lines to get in
- C. Selection of groceries
- D. Quality of produce
- E. Quality of meat
- F. Tipping
- G. Generally an unpleasant, crowded environment
- H. Store layout and size of aisles
- I. Check out lines frequently block aisles
- J. Display of items
- K. Poorly stocked shelves
- L. Unpleasant and discourteous employees
- M. Waiting lines to check out
- N. Prices not clearly marked
- O. Other (Please indicate.)

42. What is the second most unsatisfactory aspect of shopping at the commissary?

- A. Parking
- B. Waiting lines to get in
- C. Selection of groceries
- D. Quality of produce
- E. Quality of meat
- F. Tipping
- G. Generally an unpleasant, crowded environment
- H. Store layout and size of aisles
- I. Check out lines frequently block aisles
- J. Display of items
- K. Poorly stocked shelves
- L. Unpleasant and discourteous employees
- M. Waiting lines to check out
- N. Prices not clearly marked
- O. Other (Please indicate.)

43. What is the third most unsatisfactory aspect of shopping at the commissary?

- A. Parking
- B. Waiting lines to get in
- C. Selection of groceries
- D. Quality of produce
- E. Quality of meat
- F. Tipping
- G. Generally an unpleasant, crowded environment
- H. Store layout and size of aisles
- I. Check out lines frequently block aisles
- J. Display of items
- K. Poorly stocked shelves
- L. Unpleasant and discourteous employees
- M. Waiting lines to check out
- N. Prices not clearly marked
- O. Other (Please indicate.)

Thank you for your participation. Your further comments and suggestions are welcome:

Appendix B

Price Comparison Using "Unit" Prices

I. Produce

| Item description | Unit | P _c | P ₁ | P ₂ | \bar{P}_s |
|--------------------------|------------|----------------|----------------|----------------|-------------|
| 1. Delicious apples | ea. | .13 | .19 | .25 | .22 |
| 2. Bananas | 1b. | .17 | .29 | .25 | .27 |
| 3. Pink grapefruit | ea. | .18 | .27 | .27 | .27 |
| 4. Cantaloupe | ea. | .56 | .58 | .50 | .54 |
| 5. Honeydew melon | ea. | 1.03 | 1.29 | 1.09 | 1.19 |
| 6. Oranges | ea. | .07 | .14 | .13 | .13 |
| 7. White seedless grapes | lb. | .81 | .99 | .99 | .99 |
| 8. White potatoes | 10 lb. bag | 1.20 | 1.39 | 1.59 | 1.49 |
| 9. Cabbage | lb. | .17 | .23 | .19 | .21 |
| 10. Carrots | lb. | .16 | .25 | .29 | .27 |
| 11. Fresh pineapple | ea. | 1.15 | 1.29 | 1.19 | 1.24 |
| 12. Cucumbers | ea. | .20 | .29 | .25 | .27 |
| Subtotals: | | \$5.83 | \$7.20 | \$6.99 | \$7.09 |

II. Meat

| | | | | | |
|---------------------------|--------|---------|---------|---------|---------|
| 1. Sliced Bacon | 1b. | 1.39 | 1.59 | 1.59 | 1.59 |
| 2. Pork Sausage | 1b. | 1.18 | 1.69 | 1.69 | 1.69 |
| 3. Balogna | 12 oz. | .93 | 1.23 | 1.09 | 1.16 |
| 4. Hard salami | 8 oz. | 1.17 | 1.69 | 1.75 | 1.72 |
| 5. Smoked picnics | 1b. | .69 | .89 | .89 | .89 |
| 6. Canned ham | 3 lb. | 4.70 | 5.99 | 6.09 | 6.04 |
| 7. Frankfurters | 1b. | .95 | 1.42 | 1.29 | 1.35 |
| 8. Whole chicken fryers | 1b. | .52 | .65 | .65 | .65 |
| 9. Whole turkey hens | 1b. | .76 | .75 | .59 | .67 |
| 10. Center cut pork chops | 1b. | 1.49 | 2.09 | 2.17 | 2.13 |
| 11. Pork spare ribs | 1b. | 1.25 | 1.39 | 1.39 | 1.39 |
| 12. T-bone steak | 1b. | 1.91 | 2.69 | 2.49 | 2.59 |
| 13. Chuck roast | 1b. | .79 | .89 | .89 | .89 |
| 14. Sirloin steak | 1b. | 1.67 | 1.99 | 1.99 | 1.99 |
| 15. Rib steak | 1b. | 1.69 | 1.69 | 1.49 | 1.59 |
| 16. Ground beef | 1b. | .65 | .97 | .89 | .93 |
| Subtotals: | | \$21.74 | \$27.61 | \$26.94 | \$27.27 |

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III. Dairy

| Item description | Unit | Pc |
|---------------------------|--------------------|------------|
| 1. Homogenized milk | $\frac{1}{2}$ gal. | .61 |
| 2. Low fat milk | $\frac{1}{2}$ gal. | .57 |
| 3. Grade A large eggs | doz. | .63 |
| 4. Salted butter | lb. | 1.13 |
| 5. Cream cheese | 8 oz. | .53 |
| 6. Processed cheese | 2 lbs. | 1.94 |
| 7. Stick margarine | lb. | .46 |
| 8. Soft margarine | lb. | .60 |
| 9. Sliced American cheese | 8 oz. | .67 |
| 10. Sliced Swiss cheese | 8 oz. | .85 |
| 11. Canned biscuits | 8 oz. | .13 |
| 12. Canned biscuits | 10 oz. | .31 |
| 13. Canned Danish rolls | 11 oz. | .62 |
| Subtotals: | | \$9.05 \$1 |

IV. Frozen Foods

| | | |
|---------------------------|--------------------|------------|
| 1. Orange juice | 12 oz. | .63 |
| 2. Chopped broccoli | 10 oz. | .31 |
| 3. Corn on the cob | 4 ears | .70 |
| 4. French cut green beans | 10 oz. | .31 |
| 5. Brussel sprouts | 10 oz. | .40 |
| 6. Sausage pizza | $1\frac{1}{2}$ oz. | .74 |
| 7. Bread (2 loaves) | Pkg. | .48 |
| 8. Egg substitute | Carton | .73 |
| 9. Beef pot pie | 8 oz. | .25 |
| 10. Fish sticks | 14 oz. | .96 |
| 11. Fried Chicken | 2 lbs. | .70 |
| 12. Ice milk | $\frac{1}{2}$ gal. | .60 |
| Subtotals: | | \$9.50 \$1 |

V. Grocery

| | | |
|-------------------------|-----------|-----|
| 1. Strained baby food | Jar | .16 |
| 2. Junior baby food | Jar | .22 |
| 3. Corn flakes | 18 oz. | .65 |
| 4. Frosted corn flakes | 20 oz. | .91 |
| 5. Wheat cereal | 18 oz. | .74 |
| 6. Sweetened oat cereal | 18 oz. | .89 |
| 7. Unbleached flour | 5 lb. bag | .65 |

| Item description | Unit | P _c | P ₁ | P ₂ | \bar{P}_s |
|-------------------------------|--------------|----------------|----------------|----------------|-------------|
| 8. Quick-cook rice | 28 oz. | 1.12 | 1.29 | 1.23 | 1.26 |
| 9. Reg. long-grain rice | 3 lb. | .89 | .93 | .90 | .91 |
| 10. Powdered sugar | lb. | .32 | .39 | .39 | .39 |
| 11. Spaghetti noodles | lb. | .35 | .53 | .51 | .52 |
| 12. Spaghetti sauce | 32 oz. | 1.05 | 1.19 | 1.15 | 1.17 |
| 13. Disposable diapers | 12 ct. | 1.34 | 1.57 | 1.57 | 1.57 |
| 14. Disposable diapers | 24 ct. | 2.17 | 2.55 | 2.49 | 2.52 |
| 15. Fresh wipes | box | .75 | .99 | .99 | .99 |
| 16. Brown sugar | lb. | .30 | .33 | .39 | .36 |
| 17. White granulated sugar | 5 lb. bag | .82 | .88 | .88 | .88 |
| 18. White loaf bread | 24 oz. | .32 | .34 | .34 | .34 |
| 19. Hot dog buns (8) | pkg. | .47 | .49 | .57 | .53 |
| 20. Hamburger buns (8) | pkg. | .47 | .49 | .57 | .53 |
| 21. Cream filled cookies | 15 oz. | .73 | .89 | .69 | .79 |
| 22. Vanilla wafer cookies | 12 oz. | .43 | .69 | .69 | .69 |
| 23. Graham crackers | 16 oz. | .58 | .85 | .85 | .85 |
| 24. Soda crackers | 16 oz. | .54 | .71 | .68 | .69 |
| 25. Baking mix | 3 lb. 12 oz. | 1.22 | 1.45 | 1.27 | 1.36 |
| 26. Pancake mix | 32 oz. | .69 | .71 | .79 | .75 |
| 27. White cake mix | 8.5 oz. | .49 | .65 | .71 | .68 |
| 28. Canned choc. frosting | 16.5 oz. | .69 | .92 | .85 | .89 |
| 29. Blueberry muffin mix | pkg. | .62 | .75 | .75 | .75 |
| 30. Oatmeal | 18 oz. | .50 | .53 | .57 | .55 |
| 31. Brownie mix | 23 oz. | .92 | 1.19 | 1.03 | 1.11 |
| 32. Dry navy peas | 1b. | .37 | .49 | .49 | .49 |
| 33. *Cranberry juice cocktail | 48 oz. | .89 | 1.01 | 1.05 | 1.03 |
| 34. Cream of mushroom soup | can | .20 | .23 | .19 | .21 |
| 35. Chicken noodle soup | can | .20 | .20 | .21 | .21 |
| 36. Tomato soup | can | .18 | .17 | .19 | .18 |
| 37. Applesauce | #303 can | .33 | .39 | .34 | .37 |
| 38. Sliced cling peaches | #2½ can | .38 | .39 | .49 | .44 |
| 39. Fruit cocktail | #303 can | .42 | .39 | .49 | .44 |
| 40. Whole kernel corn | 12 oz. can | .30 | .38 | .35 | .37 |
| 41. Green peas | #303 can | .31 | .39 | .38 | .39 |
| 42. French cut green beans | #303 can | .32 | .37 | .38 | .39 |
| 43. Yams | #2½ can | .33 | .49 | .41 | .45 |
| 44. Whole white potatoes | #303 can | .23 | .25 | .25 | .25 |
| 45. Sliced beets | #303 can | .26 | .31 | .31 | .31 |
| 46. Whole tomatoes | #2½ can | .38 | .43 | .43 | .43 |
| 47. Crushed pineapple | #303 can | .53 | .59 | .55 | .57 |
| 48. Cranberry sauce | #2½ can | .32 | .45 | .45 | .45 |
| 49. Chow mein noodles | 5 oz. | .37 | .51 | .51 | .51 |
| 50. Chicken chow mein dinner | pkg. | 1.07 | 1.59 | 1.59 | 1.59 |
| 51. Pink Pacific salmon | 15½ oz. can | 1.48 | 1.99 | 1.89 | 1.94 |
| 52. Vienna sausage | 5 oz. | .34 | .49 | .43 | .46 |

| Item description | Unit | P _c | P ₁ | P ₂ | \bar{P}_s |
|--------------------------------|------------|----------------|----------------|----------------|-------------|
| 53. Beef stew | 24 oz. | .80 | .95 | .89 | .92 |
| 54. Corned beef hash | 15 oz. | .60 | .67 | .67 | .67 |
| 55. Pepperoni pizza mix | 16 oz. | .91 | 1.15 | 1.15 | 1.15 |
| 56. Pork and beans | #2½ can | .24 | .25 | .33 | .29 |
| 57. Spaghetti and meat balls | #303 can | .41 | .59 | .61 | .60 |
| 58. Juice drink | 46 oz. can | .39 | .44 | .44 | .44 |
| 59. Apple juice | 46 oz. can | .67 | .79 | .79 | .79 |
| 60. Unsweet. grapefruit juice | 46 oz. can | .51 | .69 | .69 | .69 |
| 61. Tomato juice | 46 oz. can | .49 | .44 | .49 | .47 |
| 62. Unsweet. pineapple juice | 46 oz. can | .51 | .69 | .69 | .69 |
| 63. Grape jelly | 18 oz. | .60 | .85 | .66 | .75 |
| 64. Strawberry preserves | 18 oz. | .80 | .79 | 1.05 | .92 |
| 65. Blackberry jam | 18 oz. | .83 | 1.13 | 1.13 | 1.13 |
| 66. Creamy peanut butter | 18 oz. | .79 | 1.03 | .89 | .96 |
| 67. Pancake syrup | 24 oz. | 1.05 | 1.29 | 1.19 | 1.24 |
| 68. Honey | 1b. jar | .77 | .99 | 1.03 | 1.01 |
| 69. French style salad dress. | 16 oz. | .70 | 1.03 | 1.03 | 1.03 |
| 70. Mustard | 9 oz. | .23 | .32 | .27 | .29 |
| 71. Ketchup | 26 oz. | .61 | .79 | .73 | .76 |
| 72. Mayonnaise | 32 oz. | .97 | 1.29 | 1.29 | 1.29 |
| 73. Drip grind coffee | 2 lbs. | 6.89 | 6.55 | 7.35 | 6.95 |
| 74. Instant coffee | 10 oz. | 4.85 | 3.66 | 4.09 | 3.87 |
| 75. Decaffeinated Inst. coffee | 8 oz. | 5.13 | 3.89 | 3.69 | 3.79 |
| 76. Instant tea | 3 oz. | 1.31 | 1.93 | 1.73 | 1.83 |
| 77. Tea bags | 48 ct. | 1.06 | .89 | 1.15 | 1.02 |
| 78. Vegetable oil | 38 oz. | 1.50 | 1.49 | 1.75 | 1.62 |
| 79. Solid shortening | 3 lb. | 1.86 | 1.65 | 1.93 | 1.79 |
| 80. Potato chips | 7½ oz. | .57 | .79 | .59 | .69 |
| 81. Instant mashed potatoes | 16 oz. | .51 | .89 | 1.09 | .99 |
| 82. Instant hot choc. mix | 12 ct. | .94 | 1.09 | 1.09 | 1.09 |
| 83. Flavored gelatin mix | 6 oz. | .34 | .41 | .37 | .39 |
| 84. Seedless raisins | 15 oz. | .96 | 1.39 | 1.39 | 1.39 |
| 85. Instant vanilla pudding | 5½ oz. | .31 | .31 | .31 | .31 |
| 86. *Dog food (canned) | 1 lb. | .22 | .29 | .23 | .26 |
| Subtotals: | | \$70.51 | \$78.81 | \$79.50 | \$79.15 |

VI. Household

| | | | | | |
|---------------------------|--------|------|------|------|------|
| 1. *Dishwasher detergent | 50 oz. | 1.38 | 1.59 | 1.59 | 1.59 |
| 2. *Giant size detergent | box | 1.31 | 1.29 | 1.29 | 1.29 |
| 3. *King size detergent | box | 2.18 | 2.35 | 2.45 | 2.40 |
| 4. *Family size bar soap | ea. | .31 | .43 | .44 | .43 |
| 5. *Liquid dish detergent | 22 oz. | .78 | .91 | .85 | .88 |
| 6. *Face tissues | 20 ct. | .52 | .56 | .65 | .61 |

| Item Description | Unit | P _c | P ₁ | P ₂ | \bar{P}_s |
|---------------------------------|-------------|----------------|----------------|----------------|-------------|
| 7. *Toilet tissue (4 roll) | pkg | .78 | .77 | .83 | .80 |
| 8. *Glass cleaner | 12 oz. | .41 | .65 | .65 | .65 |
| 9. *Laundry bleach | 1 gal. | .74 | .74 | .76 | .75 |
| 10. *Paper towels (twin pack) | pkg. | .72 | .85 | .85 | .85 |
| 11. *Paper towels (single roll) | pkg. | .57 | .56 | .59 | .57 |
| 12. *Aluminum foil | 200 sq. ft. | 1.70 | 2.45 | 2.45 | 2.45 |
| Subtotals: | | \$11.40 | \$13.15 | \$13.40 | \$13.27 |

VII. Health and Beauty Aids

| | | | | | |
|-------------------------------------|------------|---------|---------|---------|---------|
| 1. *Shaving cream | 11 oz. | .91 | 1.09 | .95 | 1.02 |
| 2. *5 Blade pack double edge blades | pkg | .85 | 1.15 | 1.15 | 1.15 |
| 3. *Tooth paste | 7 oz. | .96 | 1.05 | .94 | .99 |
| 4. *Aerosol deodorant | 8 oz. | 1.17 | 1.59 | 1.20 | 1.39 |
| 5. *Roll-on deodorant | 2.5 oz. | 1.31 | 1.69 | 1.49 | 1.59 |
| 6. *Shampoo | 4 oz. tube | 1.20 | 1.49 | 1.25 | 1.37 |
| 7. *Children's shampoo | 11 oz. | 1.51 | 1.79 | 1.53 | 1.66 |
| 8. *Family-size bandaids | can | .83 | 1.03 | 1.23 | 1.13 |
| 9. *Mouthwash | 24 oz. | 1.51 | 1.79 | 1.79 | 1.79 |
| 10. *Feminine tampons | 40 ct. | 1.47 | 1.53 | 1.48 | 1.51 |
| Subtotals: | | \$11.72 | \$14.20 | \$13.01 | \$13.60 |

* State sales tax applies

Note:

P_c is the shelf price at the commissary

P₁ is the shelf price at store 1

P₂ is the shelf price at store 2

\bar{P}_s is the average supermarket price, $\frac{P_1 + P_2}{2}$

I. Produce

| | <u>ΣP_c</u> | <u>$\Sigma \bar{P}_s$</u> |
|----------------------|--------------------------------|--------------------------------------|
| Totals: | \$5.83 | \$7.09 |
| Surcharge & tip/tax: | .29 | 0 |
| Total direct costs: | <u>\$6.12</u> | <u>\$7.09</u> |

Percentage of savings: 13.68%

II. Meat

| | | |
|----------------------|----------------|----------------|
| Totals: | \$21.74 | \$27.27 |
| Surcharge & tip/tax: | 1.09 | 0 |
| Total direct costs: | <u>\$22.83</u> | <u>\$27.27</u> |

Percentage of savings: 16.28%

III. Dairy

| | | |
|----------------------|---------------|----------------|
| Totals: | \$9.05 | \$10.97 |
| Surcharge & tip/tax: | .45 | 0 |
| Total direct costs: | <u>\$9.50</u> | <u>\$10.97</u> |

Percentage of savings: 13.40%

IV. Frozen Foods

| | | |
|----------------------|---------------|----------------|
| Totals: | \$9.50 | \$12.45 |
| Surcharge & tip/tax: | .47 | 0 |
| Total direct costs: | <u>\$9.97</u> | <u>\$12.45</u> |

Percentage of savings: 19.92%

V. Grocery

| | | |
|----------------------|----------------|----------------|
| Totals: | \$70.51 | \$79.15 |
| Surcharge & tip/tax: | 3.53 | .09 |
| Total direct costs: | <u>\$74.04</u> | <u>\$79.24</u> |

Percentage of savings: 6.56%

VI. Household

| | $\sum P_c$ | $\sum \bar{P}_s$ |
|----------------------|----------------|------------------|
| Totals: | \$11.40 | \$13.27 |
| Surcharge & tip/tax: | .57 | .66 |
| Total direct costs: | <u>\$11.97</u> | <u>\$13.93</u> |

Percentage of savings: 14.07%

VII. Health and Beauty Aids

| | | |
|----------------------|----------------|----------------|
| Totals: | \$11.72 | \$13.60 |
| Surcharge & tip/tax: | .59 | .68 |
| Total direct costs: | <u>\$12.31</u> | <u>\$14.28</u> |

Percentage of savings: 13.80%

Total all categories (including all direct costs)

$$1.05(\sum P_c) = \$146.74 \quad \sum \bar{P}_s = \$165.23$$

A. Percentage of savings (this study): 11.19%

Total all categories (shelf prices only)

$$\sum P_c = \$139.75 \quad \sum \bar{P}_s^{**} = \$163.80$$

** tax not included

B. Percentage of savings (shelf prices only): 14.68%

Note: Percentage of savings "A" is calculated using the method in this study while "B" is the way the Commissary Service normally calculates the percentage of savings.

Appendix C

Price Comparison Using A Weekly Grocery Shopping List

| Item Description | P _c | P ₁ | P ₂ | \bar{P}_s |
|---|----------------|----------------|----------------|-------------|
| 1. 2 cans Campbell's Manhandler veg-beef soup | .48 | .62 | .62 | .62 |
| 2. 2 cans Campbell's Cream of Mushroom soup | .44 | .48 | .38 | .43 |
| 3. Dozen large eggs | .54 | .79 | .81 | .80 |
| 4. Kraft American cheese slices (16) | .83 | 1.25 | 1.15 | 1.20 |
| 5. 1 lb. mild cheddar cheese | 1.28 | 1.89 | 1.95 | 1.92 |
| 6. 1 can Cinnamon-raisin Pillsbury Danish rolls | .62 | .79 | .79 | .79 |
| 7. Head of lettuce | .33 | .39 | .69 | .54 |
| 8. 1 lb. package of carrots | .16 | .39 | .30 | .35 |
| 9. 2 lbs. bananas | .32 | .58 | .58 | .58 |
| 10. 6 yellow eating apples | .60 | 1.01 | .72 | .87 |
| 11. 24 oz. Log Cabin Syrup | 1.05 | 1.29 | 1.19 | 1.24 |
| 12. 5 lb. bag sugar | .91 | .99 | .88 | .94 |
| 13. 1 lb. honey loaf | 2.05 | 3.18 | 3.19 | 3.19 |
| 14. *Glad garbage bags 11 gal. (15) | .73 | 1.19 | 1.15 | 1.17 |
| 15. *200 sq. ft. aluminum foil | 2.01 | 2.55 | 2.55 | 2.55 |
| 16. *2 single rolls Bounty paper towels | .98 | 1.30 | 1.34 | 1.32 |
| 17. *6-pack canned Coke | 1.09 | 1.49 | 1.49 | 1.49 |
| 18. 2 12 oz. cans Minute Maid orange juice | 1.30 | 1.62 | 1.62 | 1.62 |
| 19. Oscar Mayer hot dogs, all beef | .96 | 1.39 | 1.39 | 1.39 |
| 20. 1 lb. all beef balogna | 1.21 | 1.69 | 1.55 | 1.62 |
| 21. 2 lbs. extra lean ground beef | 2.18 | 2.18 | 1.98 | 2.08 |
| 22. 3 lb. whole fryer | 1.44 | 1.89 | 1.59 | 1.74 |
| 23. 3 lb. T-bone steak | 5.73 | 7.77 | 7.47 | 7.62 |
| 24. 2 boxes Parkay margarine, 6 sticks | .88 | 1.38 | 1.34 | 1.36 |
| 25. 2½ gallons low-fat milk | 1.38 | 1.54 | 1.50 | 1.52 |
| 26. 1 loaf Homepride Buttermilk wheat bread | .51 | .71 | .71 | .71 |
| 27. 19 oz. package Oreo Cookies | .95 | 1.39 | 1.39 | 1.39 |
| 28. Hot dog buns (8) | .47 | .49 | .34 | .42 |
| 29. Club crackers, box | .62 | .85 | .85 | .85 |
| 30. 15 oz. box Cheerios | .81 | .99 | .99 | .99 |
| 31. Quaker Oats, 18 oz. box | .50 | .59 | .53 | .56 |
| 32. 1 lb. box light brown sugar | .31 | .39 | -- | .39 |
| 33. 15-oz. box raisins | .76 | 1.49 | 1.29 | 1.39 |
| 34. 2 boxes froz. French-style green beans | .64 | -- | 1.10 | 1.10 |
| 35. 2 packages froz. green peas | .62 | .90 | .90 | .90 |

| | | | | | |
|-----|---|----------------|-------|-------|----------------|
| 36. | Catsup, 26 oz. jar | .59 | .79 | .73 | .76 |
| 37. | 1 quart Hellman's Mayonnaise | 1.01 | 1.29 | 1.29 | 1.29 |
| 38. | 2 #303 cans Stokeley's Finest fruit cocktail | .76 | 1.06 | 1.02 | 1.04 |
| 39. | 2 lb. can Maxwell House ADC Coffee | 6.58 | 6.95 | 7.35 | 7.15 |
| 40. | 2 12 oz. cans whole kernel corn | .64 | .60 | .78 | .69 |
| 41. | 38 oz. jar Crisco cooking oil | 1.36 | 1.99 | 1.91 | 1.95 |
| 42. | 60 oz. box Bisquick | 1.22 | 1.45 | -- | 1.45 |
| 43. | 12 oz. package Fritos corn chips | .61 | .79 | .83 | .81 |
| 44. | 40 oz. jar Mott's apple juice | .64 | -- | .83 | .83 |
| 45. | 1 lb. sliced bacon | 1.61 | 2.09 | 1.69 | 1.89 |
| 46. | 1 lb. pork sausage | 1.18 | 1.59 | 1.55 | 1.57 |
| 47. | *Giant size Tide | 1.31 | 1.57 | 1.57 | 1.57 |
| 48. | *½ gallon Clorox bleach | .54 | .59 | .57 | .58 |
| 49. | *14 oz. can Lemon Pledge furniture wax | 1.14 | 1.59 | 1.59 | 1.59 |
| | Totals: | 54.88 | 67.79 | 68.03 | 70.82 |
| | Surcharge & tip/tax: | 2.75 | | | .51 |
| | Total direct costs: | <u>\$57.63</u> | | | <u>\$71.33</u> |

* State sales tax applies

A. Percentage of savings (this study): 19.21%

B. Percentage of savings (shelf prices only): 22.51%

Chapter 2

STANDARD RATES FOR MILITARY PERSONNEL SERVICES

★50201. Standard Rates. These instructions prescribe the military personnel standard rates to be used in computing costs of military personnel services as an element of operating expense. In addition to being used for programming, budgeting, and accounting, these rates, plus the PCS standard rates in figure 5-2, are used for computing the amounts to be reimbursed by non-DOD Federal agencies. These rates, increased by the acceleration factors in paragraph 50205 and the PCS standard rates, are used for computing the amounts to be reimbursed by non-Federal organizations. Apply the CONUS or foreign rates according to figure 5-2 NOTE. These instructions do not apply to reimbursable services to foreign governments provided in-country. In these instances the actual PCS costs, or as otherwise agreed to between governments, will continue to be the basis for claiming reimbursement. Record recoupments as shown in figure 5-3.

50202. Actual Rates. Use actual costs (accounts paid or payable) for personnel of Air Force Reserves and Air National Guard on training duty for any cost reports required for these personnel. Do not include costs of Air Force Reserves and ANG in military personnel expense reports of operating budgets.

50203. Responsibility. ACA distributes military personnel cost to the expense accounts. Organizations responsible for cost systems or reimbursements make their own distribution. Reimbursements for military personnel detailed to other agencies of the Government are made by designated activities authorized to bill for such services.

50204. Components of Military Personnel Standard Rates. Standard rates are a composite of all pay, allowances, and entitlements.

- a. Factors included in standard rate:
 - (1) Average basic pay.
 - (2) Basic allowance for quarters.
 - (3) Miscellaneous benefits and expenses:
 - (a) Subsistence (cash and in kind).
 - (b) Station allowance overseas.
 - (c) Uniform and clothing allowance.
 - (d) Family separation allowance.
 - (e) Separation payments.
 - (f) Social security contribution (FICA).
 - (g) Death gratuities.
 - (h) Servicemen's life insurance.

- (i) Reenlistment and variable reenlistment bonus.
- (j) Apprehension of military deserters.
- (k) Interest on uniformed services savings deposits.
- (l) Personal money allowances at statutory rates for pay grades O-10 and O-9.
- (4) Special entitlements:
 - (a) Flight pay (crew member).
 - (b) Flight pay (noncrew member) and other hazardous duty pay.
 - (c) Foreign and sea duty pay.
 - (d) Special pay for medical, dental, and veterinary officers.
 - (e) Proficiency pay.
 - (f) Special pay—duty subject to hostile fire.
 - (g) Diving duty pay.
- b. Factors excluded from standard rate:
 - (1) Permanent change of station travel costs.
 - (2) Support of free world forces.
 - (3) Cost of Government-furnished quarters (MFH).
 - (4) Retirement pay liability.
 - (5) Medical costs (O&M).

50205. Acceleration of Standard Rates. Reimbursement transactions from non-Federal activities must include the costs of military personnel benefits which are not included in the standard rates. The acceleration factors for the accrual of retirement and other personnel costs are applicable to all non-Federal reimbursable transactions. The acceleration factor for the accrual of leave and holiday costs is applicable only when reimbursements are based on time actually worked, that is, when the reimbursing activity does not otherwise pay for the personnel costs incurred during leave and holiday periods.

- a. Retirement—17 percent for officers and enlisted personnel.
- b. Other Personnel Costs—8 percent for officers and 23 percent for enlisted personnel, to recoup the value of quarters, subsistence, medical, and other personnel costs not included in the standard rates.
- c. Leave and Holiday—20 percent for officers and enlisted personnel, to compensate for wages paid to personnel during leave or holiday period. This factor is applicable only when reimbursements are based on time actually worked.

★50206. Accounting Under Cost Systems:

a. Application. These instructions apply to all cost accounting systems.

b. Procedures for Costing Military Personnel:

(1) Rates. Charge military personnel costs as an element of operating expense, using the composite rates in figure 5-1. Account for military personnel expenses in terms of the account classifications prescribed for operating budgets. Expense military personnel of the other services at the rates for their services.

(2) Standard Work Period. Charge military personnel expenses to operating budgets on the basis of full man-months for personnel assigned as of the first day of the current month. This expense includes costs for transients, patients, prisoners, students, and trainees assigned PCS charged IAW the budgeting for these personnel as provided in AFM 172-1.

(3) Personnel Loaned and Borrowed. Adjust operating expenses of lending and borrowing organizations covered by the same operating budget for the cost of borrowed military labor, whenever this factor has a significant effect on organizational or functional expenses or when individuals are borrowed on a regular basis. Adjust for periods of 1 week or more within the same operating budget.

(4) Actual Time Variance. Noncombatant or nontactical units having a requirement for more precise data for local management and other cost accounting purposes, particularly for performance measurement and service unit charges, charge military personnel expenses at standard rates. Account for the difference between the amount of military personnel expense charged to subsidiary cost accounts on a productive or actual time basis, and the amount of assignment as of the first day of the month in overhead-type expense variance accounts. Maintain the variance accounts at the highest expense account level consistent with effective control, which frequently may be at the performing cost center or responsibility center.

(5) Overtime Variance. The standard work-week for computing costs of military personnel services is 40 hours. Overtime costs may be needed locally under subsidiary cost systems to

obtain accurate functional costs, as well as for performance measurement. When overtime is costed, record the charges for actual man-hours and charges to the operating budget on the basis of assignment on the first day of the month in expense variance accounts as stated in paragraph (4) above.

(6) Other Duties. Charge the cost of services for the 40-hour standard work week for program element, functional category, and organizational unit where the primary duties are performed, regardless of time spent during the week on extraneous duties, details to boards and committees, on-the-job training, and annual and sick leave. When significant, however, identify costs attributable to the performance of special military or incidental duties to help the commander or manager appraise the use of military personnel.

(7) Reimbursement Billings. As a general policy, show the costs of military personnel services on a memorandum basis on all billings between DOD components when such components are not financed by the same operating budget. Do not record these costs as a part of the reimbursable program of the billing organization, nor do recipients of the billings charge as expenses. Billings to DOD stock funds and billings for sales of stock fund material do not include memorandum military personnel costs. Compute billings for reimbursable services to non-DOD activities as provided in paragraph 50201.

★50207. Reimbursement Agreements. In formal agreements with non-DOD Federal agencies, provide for reimbursements to recover military personnel costs equal to the sum of the standard rates in figure 5-1 plus the PCS standard rates in figure 5-2. In agreements with non-Federal organizations, provide for reimbursements to recover military personnel costs equal to the sum of the standard rates plus the acceleration factors in paragraph 50205 plus the PCS standard rates. Do not use any other reimbursements rates without authorization by HQ USAF/ACF and the Assistant Secretary of Defense (Comptroller).

| Grade | Annual Composite Standard Rates | Monthly Composite Standard Rates | Daily Composite Standard Rates | Hourly Composite Standard Rates |
|--------|---------------------------------|----------------------------------|--------------------------------|---------------------------------|
| O-10 | \$50,036 | \$4,170 | \$192.45 | \$24.06 |
| O-9 | 47,283 | 3,940 | 181.86 | 22.73 |
| O-8 | 46,597 | 3,883 | 179.22 | 22.40 |
| O-7 | 40,567 | 3,381 | 156.03 | 19.50 |
| O-6 | 36,162 | 3,014 | 139.08 | 17.39 |
| O-5 | 30,521 | 2,543 | 117.39 | 14.67 |
| O-4 | 25,242 | 2,104 | 97.08 | 12.14 |
| O-3 | 21,481 | 1,790 | 82.62 | 10.33 |
| O-2 | 16,485 | 1,374 | 63.40 | 7.93 |
| O-1 | 11,948 | 996 | 45.95 | 5.74 |
| W-4 | 27,035 | 2,253 | 103.98 | 13.00 |
| E-9 | 19,606 | 1,634 | 75.41 | 9.43 |
| E-8 | 16,716 | 1,393 | 64.29 | 8.04 |
| E-7 | 14,509 | 1,209 | 55.80 | 6.98 |
| E-6 | 12,509 | 1,042 | 48.11 | 6.01 |
| E-5 | 10,646 | 887 | 40.95 | 5.12 |
| E-4 | 9,342 | 779 | 35.93 | 4.49 |
| E-3 | 7,563 | 630 | 29.09 | 3.64 |
| E-2 | 6,996 | 583 | 26.91 | 3.36 |
| E-1 | 6,313 | 526 | 24.28 | 3.04 |
| Cadets | 5,448 | 454 | 20.95 | 2.62 |

(These standards rates are effective 1 Oct 76.)

★Figure 5-1. Standard Rates for Military Personnel.

| | Annual | Monthly | Daily | Hourly |
|--|------------|----------|---------|--------|
| Continental United States Rates | | | | |
| Officers | \$974.20 | \$81.18 | \$3.75 | \$0.47 |
| Enlisted | 449.47 | 37.46 | 1.73 | 0.22 |
| Foreign Rates | | | | |
| Officers | \$4,474.14 | \$372.84 | \$17.21 | \$2.15 |
| Enlisted | 2,024.18 | 168.68 | 7.79 | 0.97 |

NOTE: When hours worked or officer or enlisted break is not available use 5.84 percent (CONUS) or 20.99 percent (overseas) acceleration rates. Apply the applicable acceleration to the cost of military labor at standard rate of pay that is identified on supporting documentation for billing preparation. The CONUS rates should be applied where reimbursable services are provided to non-DOD activities within the 50 states as well as countries contiguous to CONUS and to other activities when the services will be performed by CONUS-based personnel, including temporary duty overseas. The foreign rates apply to all other activities.

★Figure 5-2. PCS Standard Rates.

*Recoupment For:**Deposit To: (Note 1)*

| | |
|--|---|
| 1. Pay and allowances at standard rates (note 2) | 57 * 3500 |
| a. Identified by officer or enlisted | Project 510 or 530 |
| b. Not identified | Project 500 |
| 2. PCS costs (note 2) | 57 * 3500 |
| a. Identified by officer or enlisted | Project 5765.0M or 5865.0M |
| b. Not identified | Project 501 |
| 3. Acceleration for leave and holiday costs (note 3) | |
| a. Identified by officer or enlisted | Project 510 or 530 |
| b. Not identified | Project 500 |
| 4. Other personal costs (note 3) acceleration | 57*3400 30* 45 072896 07 C** 599 S380000 |
| 5. Retirement acceleration (note 3) | US Treasury receipt account (note 4) |

NOTES:

1. If the amount is to be collected into an appropriation, cite the one current when the services were performed. Otherwise, deposit the amount to the applicable receipt account.
2. Charge all non-DOD Federal organizations and non-Federal customers (accounts receivable sales codes 55, 70, 71, 72, 73, 85, 86, 87, 90, 92, 93, 94, 95, 98, and 99).
3. Charge all non-Federal customers (accounts receivable sales codes 55, 70, 71, 72, 73, 90, 92, 93, 94, 95, 98, and 99).
4. Credit US Treasury receipt account 573047.1 when recoveries are from foreign military sales act customers. In all other instances credit receipt account 572499.

★Figure 5-3. Recording Recoveries of Military Personnel Costs.

Appendix E

Survey Data

Key to Appendix

Monthly Grocery Bill: d after amount indicates individual eats in dining hall.

Who shops: B - both husband and wife shop
H - husband shops
W - wife shops
I - (single) shop

% Spent outside: % of monthly grocery bill spent outside of commissary

t_c : total time to shop at commissary in minutes

t_s : total time to shop at supermarket in minutes

Est. % Savings: "perceived" or estimated % of savings given by participant

Note: The monthly grocery bill of those eating in the dining hall has been rounded; \$79.50 was used in calculations for the monthly subsistence allowance and was rounded to \$80 for entry into the tables.

Airmen and Airmen Basic

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t_c | t_s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|-------|-------|----------------|----------------|
| 1. | 5 | 4 | 95 | B | 5 | 71 | 11 | 5 | 30 |
| 2. | 1 | 4 | 85d | I | 5 | 21 | 23 | 5 | 20 |
| 3. | 3 | 4 | 135 | H | 0 | 46 | 16 | - | - |
| 4. | 2 | 4 | 125 | B | 5 | 51 | 11 | 5 | 120 |
| 5. | 3 | 2 | 165 | B | 5 | 41 | 53 | 18 | 60 |
| 6. | 1 | - | 80d | I | - | - | - | - | 40 |
| 7. | 3 | 2 | 105 | B | 5 | 71 | 16 | 13 | 110 |
| 8. | 2 | 2 | 145 | B | 15 | 66 | 31 | 33 | 80 |
| 9. | 1 | - | 85d | I | 5 | 36 | 16 | 13 | 80 |
| 10. | 1 | 1 | 85d | I | 5 | 26 | 16 | 5 | 10 |
| 11. | 1 | 0.8 | 105d | I | 5 | 36 | 28 | 23 | 20 |
| 12. | 2 | 2 | 95 | B | 45 | 66 | 16 | 13 | 40 |
| 13. | 1 | 4 | 85d | I | 5 | 41 | 31 | 5 | 20 |
| 14. | 1 | 4 | 165d | I | 5 | 21 | 16 | 5 | 30 |
| 15. | 1 | 0 | 85d | I | 100 | 16 | 11 | 5 | 50 |
| 16. | 1 | - | 85d | I | 45 | 11 | 11 | 13 | - |
| Avg: | 1.8 | 2.6 | \$59.33* | | 15.9 | 41.3 | 20.4 | 11.5 | \$50.71 |

* Average per capita food bill

Airmen First Class

| Family Size | Trips Per Month | Monthly | | % Spent Outside | t_c | t_s | Est. % Savings | Amt. of Allow. |
|-------------|-----------------|--------------|-----------|-----------------|-------|-------|----------------|----------------|
| | | Grocery Bill | Who Shops | | | | | |
| 1. | 1 | 4 | 145 | I | 25 | 96 | 88 | 5 30 |
| 2. | 1 | - | 95d | I | 15 | 26 | 26 | 5 50 |
| 3. | 1 | 0 | 80d | I | 0 | 53 | 56 | 5 50 |
| 4. | 3 | 2 | 145 | B | 75 | 41 | 16 | 13 30 |
| 5. | 2 | 2 | 155 | B | 25 | 78 | 21 | 23 70 |
| 6. | 1 | 0 | 80d | I | 75 | 26 | 11 | 5 80 |
| 7. | 3 | 4 | 185 | B | 0 | 46 | 26 | 23 40 |
| 8. | 2 | 4 | 85 | B | 5 | 38 | 38 | 5 80 |
| 9. | 2 | 2 | 115 | B | 95 | 36 | 11 | 5 30 |
| 10. | 1 | 4 | 85 | I | 35 | 56 | 16 | 13 40 |
| 11. | 1 | - | 105d | I | 95 | 51 | 28 | 5 10 |
| 12. | 1 | 0 | 85d | I | 25 | 26 | 48 | 13 50 |
| 13. | 2 | 2 | 85 | W | 100 | 36 | 11 | 5 50 |
| Avg: | 1.6 | 2.2 | \$68.93* | | 43.9 | 46.9 | 30.5 | 9.6 \$46.92 |

* Average per capita food bill

Sergeants/Senior Airmen

| Family Size | Trips Per Month | Monthly | | | % Spent Outside | t_c | t_s | Est. % Savings | Amt. of Allow. |
|----------------|-----------------------|-----------------|--------------|---|--------------------|-------|-------|-------------------|----------------------|
| | | Grocery Bill | Who Shops | | | | | | |
| 1. | 1 | - | 85d | I | - | 21 | 28 | 5 | 60 |
| 2. | 3 | 2 | 85 | B | 15 | 51 | 11 | 5 | 100 |
| 3. | 2 | 2 | 105 | B | 100 | 26 | 11 | 5 | 40 |
| 4. | 2 | 2 | 125 | W | 15 | 86 | 31 | 23 | 100 |
| 5. | 2 | 4 | 225 | B | 85 | 63 | 16 | 13 | 80 |
| 6. | 3 | 4 | 135 | W | 5 | 26 | 16 | 28 | 80 |
| 7. | 3 | 2 | 125 | B | 15 | 70 | 26 | 5 | 120 |
| 8. | 3 | 2 | 145 | W | 95 | 86 | 16 | 13 | 30 |
| 9. | 3 | 2 | 145 | B | 35 | 76 | 16 | 5 | 80 |
| 10. | 1 | 4 | 245 | I | 95 | 78 | 16 | 5 | 40 |
| 11. | 1 | 2 | 195 | I | 45 | 63 | 41 | 5 | 50 |
| 12. | 1 | 0 | 85d | I | 5 | 11 | 16 | 5 | 80 |
| 13. | 4 | 2 | 155 | B | 100 | 83 | 16 | 5 | 20 |
| 14. | 4 | 4 | 295 | B | 100 | - | 11 | - | 150 |
| Avg. | 2.4 | 2.5 | \$65.12* | | 54.6 | 56.9 | 19.4 | 9.4 | \$73.57 |

* Average per capita food bill

Staff Sergeants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|
| 1. | 1 | 2 | 145 | I | 100 | 58 | 31 | 5 | 0 |
| 2. | 3 | 4 | 135 | B | 95 | - | 31 | - | - |
| 3. | 1 | 4 | 95 | I | 15 | 36 | 16 | 13 | 60 |
| 4. | 4 | 2 | 275 | B | 15 | 83 | 16 | 13 | 80 |
| 5. | 5 | 4 | 135 | W | 55 | 43 | 11 | 5 | - |
| 6. | 4 | 4 | 255 | B | 55 | 76 | 16 | 5 | 50 |
| 7. | 3 | 1 | 125 | H | 100 | 90 | 16 | 5 | 125 |
| 8. | 2 | 1.3 | 80 | B | 100 | 56 | 11 | 5 | 20 |
| 9. | 1 | 1 | 65 | I | 100 | - | 76 | - | - |
| 10. | 6 | 2 | 215 | B | 5 | 68 | 16 | 13 | 100 |
| 11. | 3 | 2 | 145 | W | 35 | 63 | 21 | 28 | 80 |
| 12. | 3 | 2 | 315 | W | 5 | 56 | 11 | 18 | 80 |
| 13. | 3 | 2 | 215 | W | 5 | 66 | 21 | 5 | 80 |
| 14. | 5 | 2 | 215 | W | 25 | 78 | 11 | 5 | 60 |
| 15. | 1 | 4 | 105 | I | 100 | 98 | 16 | 5 | 125 |
| 16. | 3 | 2 | 165 | B | 25 | 63 | 28 | 13 | 80 |
| 17. | 6 | 4 | 265 | H | 5 | 90 | 16 | 23 | 200 |
| 18. | 5 | 2 | 155 | W | 5 | 66 | 31 | 18 | 40 |
| 19. | 5 | 4 | 95 | B | 5 | 76 | 16 | 13 | 80 |
| 20. | 5 | 2 | 345 | W | 25 | 90 | 16 | 28 | 200 |
| Avg: | 3.5 | 2.6 | \$51.38* | | 43.8 | 69.8 | 21.4 | 12.2 | \$85.88 |

* average per capita food bill

Technical Sergeants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t_c | t_s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|-------|-------|----------------|----------------|
| 1. | 5 | 2 | 455 | W | 5 | 51 | 11 | 5 | 80 |
| 2. | 2 | 4 | 165 | B | 95 | 36 | 31 | 13 | 200 |
| 3. | 2 | 4 | 265 | W | 25 | 68 | 31 | 18 | 150 |
| 4. | 4 | 2 | 305 | B | 45 | 81 | 11 | 5 | 80 |
| 5. | 4 | 2 | 195 | B | 15 | 70 | 21 | 18 | 70 |
| 6. | 2 | 4 | 175 | H | 5 | 71 | 16 | 5 | 60 |
| 7. | 6 | 2 | 325 | H | 0 | 36 | 16 | 18 | 100 |
| 8. | 4 | 2 | 245 | B | 35 | 46 | 16 | 5 | 40 |
| 9. | 6 | 2 | 205 | W | 15 | 90 | 16 | 13 | 50 |
| 10. | 4 | 2 | 235 | W | 5 | 88 | 21 | 13 | 40 |
| 11. | 4 | 4 | 175 | H | 15 | 58 | 21 | 13 | 80 |
| 12. | 5 | 4 | 345 | B | 100 | - | 51 | 13 | 50 |
| 13. | 4 | 2 | 175 | B | 5 | 68 | 16 | 18 | 60 |
| 14. | 4 | 1 | 235 | W | 85 | 83 | 11 | 5 | 80 |
| 15. | 6 | 2 | 267 | B | 5 | 63 | 28 | 18 | 80 |
| 16. | 5 | 2 | 205 | B | 25 | 90 | 38 | 5 | 80 |
| 17. | 5 | 4 | 185 | B | 15 | 61 | 16 | 18 | 125 |
| 18. | 4 | 1 | 225 | W | 5 | 46 | 11 | 13 | 80 |
| 19. | 5 | 4 | 335 | W | 15 | 71 | 16 | 18 | 80 |
| 20. | 6 | 2 | 295 | W | 15 | 66 | 16 | 13 | 100 |
| Avg: | 4.3 | 2.6 | \$57.61* | | 26.5 | 65.4 | 20.7 | 12.4 | \$84.25 |

* average per capita food bill

Master Sergeants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|
| 1. | 4 | 2 | 335 | W | 5 | 76 | 16 | 13 | 40 |
| 2. | 4 | 7.5 | 115 | H | 15 | 53 | 16 | 13 | 50 |
| 3. | 5 | 2 | 195 | W | 5 | 61 | 16 | 13 | 50 |
| 4. | 3 | 4 | 225 | H | 15 | 76 | 16 | 13 | 30 |
| 5. | 1 | 1 | 75 | I | 45 | 41 | 11 | 13 | 50 |
| 6. | 2 | 1.3 | 158 | B | 25 | 88 | 21 | 18 | 10 |
| 7. | 4 | 2 | 385 | B | 25 | 70 | 16 | 13 | 80 |
| 8. | 6 | 2 | 385 | W | 5 | 76 | 21 | 5 | 30 |
| 9. | 4 | 4 | 185 | B | 100 | 21 | 11 | 5 | 0 |
| 10. | 3 | 4 | 525 | W | 15 | 51 | 11 | 13 | 60 |
| 11. | 5 | 4 | 135 | W | 55 | 86 | 58 | 13 | 50 |
| 12. | 4 | 2 | 215 | B | 25 | 46 | 16 | 18 | 80 |
| 13. | 4 | 4 | 205 | B | 5 | 58 | 31 | 13 | 60 |
| 14. | 6 | 4 | 295 | W | 5 | 51 | 11 | 13 | 100 |
| 15. | 7 | 1 | 225 | W | 25 | 83 | 16 | 13 | 50 |
| 16. | 4 | 2 | 195 | W | 5 | 63 | 16 | 18 | 80 |
| 17. | 3 | 4 | 245 | W | 25 | 58 | 11 | 5 | 80 |
| 18. | 4 | 2 | 175 | W | 15 | 83 | 11 | 18 | 80 |
| 19. | 5 | 4 | 425 | W | 15 | 66 | 31 | 13 | 70 |
| 20. | 3 | 2 | 215 | W | 5 | 63 | 16 | 28 | 80 |
| 21. | 5 | 4 | 235 | H | 35 | 63 | 31 | 18 | 70 |
| 22. | 2 | 1 | 115 | B | 5 | 61 | 31 | 33 | 300 |
| 23. | 2 | 2 | 105 | B | 25 | 81 | 16 | 18 | 60 |
| 24. | 2 | 2 | 85 | H | 5 | 46 | 51 | 33 | 50 |
| 25. | 4 | 2 | 265 | W | 25 | 71 | 16 | 18 | 50 |
| 26. | 5 | 4 | 425 | W | 15 | 41 | 13 | 13 | 50 |
| Avg: | 3.9 | 2.8 | \$60.82* | | 21.0 | 62.8 | 20.3 | 15.5 | \$65.77 |

* average per capita food bill

Senior Master Sergeants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. | |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|---------|
| 1. | 4 | 4 | 260 | W | 5 | 63 | 11 | 13 | 50 | |
| 2. | 3 | 4 | 175 | H | 45 | 90 | 11 | 5 | 50 | |
| 3. | 1 | 2 | 45 | I | 0 | 46 | 26 | 18 | 70 | |
| 4. | 2 | 2 | 195 | B | 5 | 66 | 26 | 18 | 70 | |
| 5. | 3 | 4 | 165 | B | 15 | 66 | 48 | 5 | 175 | |
| 6. | 2 | 4 | 125 | H | 5 | 66 | 16 | 13 | 105 | |
| 7. | 4 | 2 | 385 | W | 15 | 81 | 16 | 18 | 80 | |
| 8. | 4 | 4 | 415 | B | 5 | 56 | 31 | 18 | 100 | |
| 9. | 3 | 1.3 | 215 | B | 25 | 66 | 11 | 18 | 50 | |
| 10. | 4 | 4 | 295 | B | 5 | 70 | 21 | 13 | 70 | |
| 11. | 4 | 2 | 305 | B | 15 | 46 | 26 | 18 | 80 | |
| 12. | 4 | 2 | 255 | H | 5 | 46 | 23 | 13 | 50 | |
| 13. | 8 | 4 | 425 | W | 45 | 110 | 21 | 5 | 80 | |
| 14. | 4 | 2 | 175 | W | 15 | 83 | 16 | 13 | 40 | |
| 15. | 5 | 4 | 285 | H | 0 | 66 | 16 | 18 | 80 | |
| 16. | 5 | 2 | 185 | H | 15 | 96 | 23 | 13 | - | |
| 17. | 3 | .4 | 275 | - | 65 | 43 | 16 | 13 | 60 | |
| 18. | 5 | 2 | 345 | B | 5 | 61 | 16 | 23 | 50 | |
| 19. | 5 | 4 | 275 | W | 5 | 46 | 16 | 5 | 70 | |
| 20. | 2 | 4 | 125 | W | 25 | 51 | 46 | 13 | 30 | |
| 21. | 4 | 2 | 305 | W | 25 | 101 | 23 | 13 | 50 | |
| 22. | 3 | 4 | 325 | H | 15 | 76 | 11 | 13 | 70 | |
| 23. | 3 | 2 | 165 | W | 5 | 46 | 16 | 18 | 50 | |
| 24. | 1 | 4 | 95 | I | 5 | 53 | 16 | 5 | 20 | |
| 25. | 5 | 2 | 345 | W | 5 | 51 | 38 | 18 | 95 | |
| 26. | 4 | 4 | 215 | W | 5 | 83 | 31 | 13 | 40 | |
| 27. | 4 | 2 | 245 | W | 85 | 81 | 21 | 13 | 50 | |
| 28. | 4 | 2 | 265 | W | 5 | 90 | 16 | 13 | 200 | |
| 29. | 3 | 4 | 285 | B | 95 | 101 | 16 | 5 | - | |
| 30. | 4 | 4 | 360 | W | 25 | 83 | 31 | 18 | 80 | |
| 31. | 2 | 4 | 235 | B | 5 | 36 | 38 | 18 | 70 | |
| 32. | 5 | 2 | 335 | W | 35 | 71 | 11 | 13 | 50 | |
| 33. | 2 | 4 | 215 | - | 5 | 66 | 31 | 5 | 40 | |
| Avg: | | 3.6 | 3.1 | \$69.87* | | 19.2 | 68.4 | 22.3 | 13.3 | \$70.15 |

* average per capita food bill

Chief Master Sergeants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t_c | t_s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|-------|-------|----------------|----------------|
| 1. | 4 | 2 | 255 | - | 5 | 51 | 31 | 13 | 50 |
| 2. | 2 | 4 | 225 | H | 15 | 71 | 16 | 18 | 80 |
| 3. | 3 | 2 | 105 | W | 15 | 76 | 11 | 13 | 20 |
| 4. | 4 | 2 | 285 | B | 15 | 83 | 36 | 18 | 80 |
| 5. | 3 | 2 | 95 | W | 100 | 86 | 16 | 13 | 190 |
| 6. | 6 | 2 | 235 | B | 5 | 66 | 11 | 23 | 80 |
| 7. | 5 | 2 | 565 | W | 25 | 58 | 21 | 5 | 50 |
| 8. | 6 | 4 | 435 | W | 15 | 81 | 16 | 13 | 40 |
| 9. | 3 | 2 | 205 | B | 25 | 46 | 31 | 18 | 80 |
| 10. | 4 | 4 | 385 | W | 5 | 78 | 21 | 13 | 80 |
| 11. | 4 | 4 | 255 | H | 15 | 58 | 31 | 13 | 40 |
| 12. | 4 | 4 | 245 | H | 35 | 46 | 31 | 5 | 30 |
| 13. | 4 | 4 | 320 | W | 5 | 41 | 11 | 13 | 30 |
| 14. | 7 | 4 | 335 | W | 55 | 51 | 16 | 13 | 50 |
| 15. | 3 | 2 | 205 | W | 55 | 83 | 16 | 13 | 60 |
| 16. | 2 | 1 | 140 | W | 5 | 81 | 26 | 18 | 30 |
| 17. | 3 | 4 | 175 | W | 5 | 81 | 33 | 18 | 50 |
| 18. | 5 | 2 | 175 | B | 5 | 36 | 31 | 13 | 60 |
| 19. | 2 | 4 | 165 | W | 5 | 76 | 31 | 18 | 20 |
| Avg: | 3.9 | 2.9 | \$64.93* | | 21.6 | 65.7 | 23.0 | 14.3 | \$58.95 |

* average per capita food bill

Second Lieutenants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|
| 1. | 2 | 1 | 125 | W | 45 | 43 | 11 | 13 | 10 |
| 2. | 1 | 4 | 95 | I | 100 | - | 31 | 18 | 30 |
| 3. | 1 | 2 | 115 | I | 100 | - | 21 | 5 | 50 |
| 4. | 1 | 4 | 135 | I | 45 | 41 | 11 | 13 | 50 |
| 5. | 1 | 2 | 65 | I | 15 | 58 | 28 | 5 | 80 |
| 6. | 1 | 2 | 75 | I | 5 | 41 | 31 | 18 | 80 |
| 7. | 2 | 4 | 135 | W | 0 | 26 | - | 18 | 40 |
| 8. | 2 | 2 | 105 | W | 5 | 60 | 31 | 28 | 30 |
| 9. | 1 | 4 | 85 | I | 5 | 36 | 26 | 18 | 30 |
| 10. | 2 | 1 | 115 | B | 25 | 81 | 26 | 13 | 100 |
| 11. | 1 | 4 | 135 | - | 100 | - | 16 | 13 | 0 |
| 12. | 2 | 4 | 95 | B | 0 | 41 | 11 | 13 | 50 |
| 13. | 1 | 2 | 55 | I | 0 | 43 | 26 | 13 | 30 |
| 14. | 1 | 1 | 75 | I | 5 | 36 | 11 | 5 | 10 |
| 15. | 2 | 4 | 135 | B | 5 | 81 | 21 | 13 | 100 |
| 16. | 2 | 1.3 | 158 | B | 25 | 76 | 16 | 13 | 30 |
| 17. | 1 | 4 | 85 | I | 100 | - | 11 | - | 30 |
| 18. | 1 | 1.3 | 72 | I | 15 | 46 | 11 | 13 | 30 |
| 19. | 1 | 4 | 85 | I | 5 | 56 | 31 | 13 | 20 |
| 20. | 4 | 2 | 225 | W | 15 | 78 | 16 | 13 | 20 |
| 21. | 2 | 2 | 125 | B | 15 | 68 | 11 | 13 | 20 |
| 22. | 1 | 4 | 105 | I | 15 | 63 | 26 | 13 | 30 |
| 23. | 1 | 4 | 85 | I | 100 | 36 | 26 | 5 | 30 |
| 24. | 1 | 1.3 | 45 | I | 5 | 51 | 16 | 18 | 10 |
| Avg: | 1.5 | 2.7 | \$72.29* | | 31.3 | 53.1 | 20.2 | 13.4 | \$37.92 |

* average per capita food bill

First Lieutenants

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|
| 1. | 1 | 2 | 95 | I | 15 | 36 | 11 | 18 | 50 |
| 2. | 5 | 2 | 235 | H | 5 | 66 | 11 | 5 | 30 |
| 3. | 1 | 4 | 85 | I | 95 | 66 | 26 | 13 | 40 |
| 4. | 3 | 4 | 295 | W | 95 | 106 | 31 | 13 | - |
| 5. | 2 | 1 | 115 | W | 15 | 78 | 11 | 18 | 30 |
| 6. | 1 | 4 | 165 | I | 100 | - | 16 | - | 0 |
| 7. | 2 | 2 | 85 | W | 5 | 31 | 11 | 5 | 60 |
| 8. | 4 | 2 | 215 | W | 25 | 63 | 26 | 28 | 50 |
| 9. | 3 | 1 | 135 | B | 15 | 36 | 26 | 5 | 20 |
| 10. | 3 | 2 | 185 | W | 5 | 73 | 16 | 5 | 50 |
| 11. | 1 | 2 | 65 | I | 0 | 56 | 28 | 5 | 60 |
| 12. | 1 | 1 | 45 | I | 95 | 81 | 36 | 18 | 60 |
| 13. | 3 | 4 | 255 | B | 15 | 53 | 16 | 5 | 40 |
| 14. | 3 | 2 | 175 | B | 5 | 58 | 11 | 18 | 30 |
| 15. | 1 | 4 | 135 | I | 15 | 36 | 31 | 5 | 40 |
| 16. | 1 | 4 | 135 | I | 55 | 26 | 11 | 23 | 20 |
| 17. | 2 | 4 | 205 | B | 5 | 63 | 11 | 13 | 50 |
| 18. | 4 | 2 | 195 | W | 15 | 76 | 16 | 18 | 80 |
| Avg: | 2.3 | 2.6 | \$68.78* | | 32.2 | 59.1 | 19.2 | 12.7 | \$41.76 |

* average per capita food bill

Captains

| Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. |
|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|
| 1. 4 | 2 | 215 | B | 5 | 41 | 26 | 23 | 70 |
| 2. 4 | 4 | 565 | W | 45 | 81 | 16 | 13 | 50 |
| 3. 4 | 2 | 235 | B | 0 | 43 | 43 | 28 | 80 |
| 4. 5 | 2 | 225 | W | 25 | 70 | 26 | 28 | 100 |
| 5. 5 | 2 | 235 | W | 45 | 76 | 16 | 13 | 30 |
| 6. 6 | 4 | 325 | W | 15 | 90 | 11 | 18 | 60 |
| 7. 2 | 2 | 115 | W | 15 | 66 | 38 | 5 | 40 |
| 8. 4 | 4 | 275 | W | 5 | 91 | 16 | - | 70 |
| 9. 2 | 4 | 125 | H | 35 | 36 | 11 | 13 | 80 |
| 10. 3 | 2 | 145 | B | 5 | 66 | 16 | 5 | 50 |
| 11. 3 | 2 | 175 | W | 15 | 61 | 41 | 13 | 30 |
| 12. 4 | 2 | 255 | W | 5 | 53 | 53 | 23 | 80 |
| 13. 3 | 4 | 215 | B | 5 | 36 | 51 | 18 | 50 |
| 14. 4 | 2 | 165 | W | 25 | 86 | 21 | 13 | 30 |
| 15. 4 | 2 | 145 | W | 5 | 36 | 16 | 13 | 50 |
| 16. 3 | 2 | 115 | B | 15 | 41 | 31 | 5 | 10 |
| 17. 4 | 2 | 185 | W | 65 | 43 | 21 | 18 | 80 |
| 18. 1 | 2 | 95 | I | 25 | 46 | 11 | 5 | 80 |
| 19. 3 | 2 | 175 | W | 5 | 88 | 31 | 13 | 120 |
| 20. 7 | 4 | 355 | W | 45 | 83 | 11 | 5 | 80 |
| 21. 4 | 2 | 175 | W | 25 | 90 | 16 | 13 | 80 |
| 22. 4 | 4 | 145 | B | 95 | 96 | 11 | 13 | 30 |
| 23. 1 | 2 | 85 | I | 45 | 46 | 11 | 13 | 10 |
| 24. 4 | 2 | 215 | W | 5 | 70 | 11 | 5 | 30 |
| 25. 3 | 4 | 135 | W | 95 | 81 | 11 | 5 | 50 |
| 26. 4 | 4 | 335 | W | 15 | 31 | 31 | 5 | 80 |
| 27. 5 | 2 | 255 | W | 15 | 26 | 26 | 18 | - |
| 28. 4 | 1 | 225 | W | 35 | 71 | 26 | 33 | 80 |
| 29. 3 | 2 | 145 | W | 25 | 76 | 11 | 18 | 120 |
| 30. 2 | 4 | 165 | W | 65 | 66 | 26 | 18 | 40 |
| Avg: 3.6 | | 2.6 | \$57.06* | 27.5 | 62.9 | 22.9 | 14.2 | \$60.69 |

* average per capita food bill

Majors

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|
| 1. | 5 | 2 | 245 | W | 35 | 108 | 16 | 18 | 80 |
| 2. | 1 | 4 | 205 | I | 100 | 81 | 16 | 5 | 150 |
| 3. | 3 | 4 | 165 | B | 95 | 56 | 16 | 18 | 30 |
| 4. | 5 | 2 | 225 | B | 25 | 56 | 11 | 13 | 30 |
| 5. | 1 | 4 | 125 | I | 100 | 63 | 26 | 5 | 40 |
| 6. | 2 | 1.3 | 122 | B | 15 | 31 | 11 | 5 | 150 |
| 7. | 3 | 2 | 265 | W | 15 | 66 | 11 | 23 | 80 |
| 8. | 4 | 2 | 225 | W | 5 | 46 | 31 | 13 | 50 |
| 9. | 6 | 4 | 355 | H | 55 | 91 | 11 | 13 | 40 |
| 10. | 5 | 1 | 115 | W | 55 | 83 | 26 | 18 | 40 |
| 11. | 3 | 1 | 235 | H | 25 | 96 | 11 | 18 | 35 |
| 12. | 5 | 2 | 275 | B | 5 | 46 | 11 | 13 | 40 |
| 13. | 4 | 2 | 370 | W | 75 | 56 | 31 | 5 | 10 |
| 14. | 4 | 4 | 425 | W | 75 | 71 | 11 | 13 | 20 |
| 15. | 5 | 2 | 215 | W | 15 | 51 | 31 | 18 | 40 |
| 16. | 4 | 1 | 180 | W | 15 | 61 | 31 | 23 | 50 |
| 17. | 5 | 3 | 255 | W | 25 | 41 | 26 | 23 | 60 |
| 18. | 4 | 4 | 215 | W | 5 | 58 | 43 | 13 | 50 |
| 19. | 2 | 2 | 145 | W | 35 | 51 | 16 | 5 | 20 |
| 20. | 4 | 4 | 435 | W | 75 | 73 | 11 | 13 | 20 |
| 21. | 5 | 4 | 215 | W | 45 | 41 | 16 | 18 | 60 |
| Avg: | 3.8 | 2.6 | \$62.65* | | 42.6 | 63.1 | 19.7 | 14.0 | \$52.14 |

* average per capita food bill

Lieutenant Colonels

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t _c | t _s | Est. % Savings | Amt. of Allow. | |
|------|-------------|-----------------|----------------------|-----------|-----------------|----------------|----------------|----------------|----------------|---------|
| 1. | 4 | 2 | 155 | W | 5 | 58 | 16 | 13 | 50 | |
| 2. | 6 | 4 | 465 | H | 25 | 71 | 11 | 13 | 40 | |
| 3. | 3 | 2 | 165 | W | 45 | 36 | 16 | 18 | 0 | |
| 4. | 4 | 4 | 375 | W | 5 | 70 | 11 | 13 | 40 | |
| 5. | 1 | 4 | 85 | I | 100 | - | - | - | - | |
| 6. | 4 | 4 | 495 | W | 5 | 66 | 16 | 13 | 80 | |
| 7. | 1 | 1.3 | 68 | I | 45 | 46 | 31 | 13 | - | |
| 8. | 6 | 1.3 | 175 | W | 15 | 66 | 16 | 13 | 70 | |
| 9. | 6 | 2 | 325 | W | 45 | 56 | 11 | 13 | 50 | |
| 10. | 5 | 2 | 245 | W | 15 | 91 | 36 | 28 | 70 | |
| 11. | 4 | 2 | 275 | W | 5 | 83 | 26 | - | - | |
| 12. | 6 | - | - | W | 100 | 78 | 11 | 5 | 100 | |
| 13. | 1 | 4 | 85 | I | 5 | 81 | 36 | 13 | 50 | |
| 14. | 4 | 2 | 235 | W | 15 | 61 | 11 | 23 | 80 | |
| 15. | 5 | 2 | 265 | W | 5 | 46 | 26 | 23 | 80 | |
| 16. | 3 | 4 | 175 | B | 15 | 41 | 46 | 18 | 100 | |
| 17. | 5 | 2 | 255 | W | 5 | 51 | 16 | 18 | 80 | |
| 18. | 4 | 2 | 235 | W | 15 | 81 | 16 | 13 | 40 | |
| 19. | 6 | 4 | 435 | W | 55 | 41 | 70 | 13 | 80 | |
| 20. | 5 | 4 | 315 | W | 5 | 36 | 26 | 18 | 200 | |
| 21. | 5 | 4 | 345 | W | 95 | 51 | 23 | 5 | 100 | |
| 22. | 4 | 2 | 345 | W | 55 | 73 | 16 | 5 | 10 | |
| 23. | 4 | 2 | 235 | W | 15 | 61 | 26 | 18 | 30 | |
| 24. | 3 | 4 | 245 | B | 5 | 76 | 50 | 18 | 70 | |
| 25. | 7 | 4 | 335 | W | 5 | 61 | 11 | 5 | 50 | |
| 26. | 4 | 4 | 435 | B | 45 | 91 | 36 | 23 | 95 | |
| 27. | 4 | 4 | 355 | B | 35 | 61 | 11 | 13 | 50 | |
| 28. | 3 | 2 | 585 | W | - | 43 | 35 | - | 80 | |
| 29. | 2 | 2 | 205 | W | 5 | 76 | 46 | 5 | 80 | |
| 30. | 4 | 1 | 155 | B | 5 | 58 | 28 | 18 | 80 | |
| Avg: | | 4.1 | 2.8 | \$68.96* | | 27.5 | 62.4 | 25.2 | 14.5 | \$66.25 |

* average per capita food bill

Colonels

| | Family Size | Trips Per Month | Monthly Grocery Bill | Who Shops | % Spent Outside | t_c | t_s | Est. % Savings | Amt. of Allow. |
|------|-------------|-----------------|----------------------|-----------|-----------------|-------|-------|----------------|----------------|
| 1. | 4 | 1 | 215 | W | 65 | 51 | 11 | 13 | 80 |
| 2. | 2 | 4 | 165 | W | 5 | 21 | 31 | 28 | 50 |
| 3. | 3 | 4 | 185 | W | 15 | 41 | 31 | 18 | 50 |
| 4. | 4 | 4 | 485 | W | 35 | 83 | 11 | 23 | - |
| 5. | 5 | 2 | - | W | 100 | - | - | 5 | - |
| 6. | 3 | 4 | 205 | W | 85 | 90 | 16 | 13 | 80 |
| 7. | 3 | 1 | 170 | W | 35 | 71 | 26 | 18 | 40 |
| 8. | 2 | 4 | 315 | W | 65 | 48 | 11 | 5 | 30 |
| 9. | 4 | 4 | 255 | W | 15 | 43 | 31 | 13 | 40 |
| 10. | 4 | 4 | 285 | W | 25 | 56 | 11 | 18 | 80 |
| 11. | 5 | 2 | 455 | W | 15 | 76 | 51 | 13 | 70 |
| 12. | 5 | 4 | 645 | B | 100 | 46 | 68 | 13 | 60 |
| 13. | 5 | 1.3 | 175 | W | 5 | 83 | 26 | 18 | 40 |
| 14. | 2 | 2 | 215 | W | 45 | 66 | 26 | 13 | 50 |
| 15. | 7 | 4 | 225 | B | 35 | 61 | 16 | 18 | 60 |
| 16. | 5 | 4 | 575 | W | - | 63 | 31 | - | - |
| 17. | 2 | 1.3 | 195 | W | 5 | 55 | 31 | 18 | 150 |
| 18. | 4 | 4 | 255 | W | 5 | 31 | 26 | 33 | 125 |
| 19. | 4 | 4 | 185 | W | 5 | 51 | 31 | 13 | 50 |
| 20. | 4 | 4 | 265 | B | 5 | 36 | 31 | 23 | 100 |
| 21. | 6 | 4 | 425 | W | 15 | 36 | 26 | 13 | 100 |
| 22. | 6 | 4 | 165 | W | 5 | 36 | 46 | 18 | 40 |
| 23. | 4 | 4 | 255 | W | 15 | 36 | 31 | 18 | 40 |
| 24. | 4 | 2 | 215 | W | 95 | 63 | 36 | 23 | 50 |
| 25. | 4 | 2 | 205 | W | 25 | 51 | 26 | 5 | 60 |
| 26. | 6 | 4 | 385 | W | 15 | 41 | 56 | 13 | 40 |
| Avg: | 4.1 | 3.2 | \$69.80* | | 33.4 | 53.4 | 29.5 | 16.2 | \$64.57 |

* average per capita food bill

Appendix F

Summary of Comments From Surveys

Second Lieutenants

-- I feel that, although you may save money, shopping at the commissary is definitely not worth the aggravation. I shopped there once and I am convinced that I'll never set foot in there again.

-- Wright-Patt Commissary is too small for the number of people they serve. There aren't enough check out counters either. I suggest someone build a bigger and more convenient commissary (like the one on Hickam AFB, Hawaii!)

-- Bagboys kept squashing bread. All check out lanes should be open all the time. Empty carts behind checkers should be moved to waiting people more quickly.

First Lieutenants

-- The unsatisfactory meat selection and stocking probably results from my 5 p.m. jaunts. By this time the stock is low and the quality pieces are already sold. Plus, I have never been able to find fresh beef/calves' liver. I do enjoy buying neck bones and "soup" bones for Oriental dishes.

Captains

-- I would shop weekly if commissary conditions were better, thus saving several trips for incidentals.

-- No matter how I schedule my shopping day -- before, after, during or between pay periods, whether early, noon or late afternoon, I have to find a parking spot, wait for a basket and wait in the check out line. I have not found any ideal time. To add to this, because the people block the aisles while waiting in the check out lines, I often pass by items I need. Sometimes the people are rude, and in a way I can't blame them as I also hate waiting in these lines. Often there are not

enough check outs open to handle the volume. I would prefer the commissary opening at 8 a.m., especially in the summer. Often my ice cream is melting before I reach the check out and there aren't any cold pack bags. Often the employees are a little discourteous. The bag boys often react to the tip you give them. Shopping at the local stores does not require tipping the bag boy and sometimes I'd prefer to have packed my own bags when I see the way my purchases look when I arrive home. The quality of the meat has steadily gone down. The amount of fat and bone on roasts etc., is excessive and one doesn't find this out till ready to cook due to the way it's packaged. I got so disgusted with the meat at the commissary that I buy all my meats except lunch meats at Fazids. Also, on the steaks at the commissary -- they leave so little, if any, tenderloins on the cuts; and I don't ever see the tenderloins sold separately. At our last two stations I was able to buy milk by the six-pack carton which is a convenience to those of us who buy large quantities of milk. When I asked the stocker at the dairy section about this, he said they don't do it here. A good practice to put into effect here would be to have the patrons using coupons to underline the expiration date on coupons so that the checkers wouldn't have to check each coupon and thus save some time for those waiting in line. Sometimes I find the items on my shopping list are not on the shelves for weeks at a time; to name a few, Bisquick, Snickers Fun Size, and Romano cheese. Also, it's months before new items are introduced. I am trying to avoid use of aerosol spray cans and manufacturers are advertising these items in non-aerosol spray bottles, but the commissary doesn't stock them. The W-PAFB Commissary needs a lot of improvement, but basically my opinion is that the store and parking area is too small for the number of people using this facility.

-- It sure must be nice to be able to use such a mundane topic for Master's level research!

-- After having reviewed the questionnaire, it is apparent to me that I shop at the commissary purely out of habit for a perceived savings of \$10 a month. After reviewing all inconvenience of shopping at the commissary I have decided that the savings of \$10 a month is not worth it. I shall shop elsewhere from now on. Thanks.

-- Scheduling of cashiers needs to be carefully studied and reorganized as there is nothing more irritating than being in a crowded store and having only 3 checkers. To me it is inexcusable on peak days to have so few. Also, I would like to see more new products on the shelves and more courteous baggers.

-- I suggest all check out lanes be operating at all times. It's very frustrating to be standing in line and have your lane get closed -- definitely not consumer oriented.

-- For the size of the base, this is the worst commissary in the Air Force.

-- The only reason our shopping is done at the commissary is the price savings. If prices at other stores were comparable to the commissary or if we had a choice of receiving a monthly allowance rather than shopping at the commissary, we would definitely shop off base.

Majors

-- If I didn't live on base I would use the commissary very little. The W-PAFB commissary is one of the worst I've been in. I just came from Scott AFB which has one of the best commissaries.

-- Run those empty checkout lanes during peak periods.

-- If military pay was raised to compensate for commissary savings, I'd more than be glad to shop in the civilian market place. The added convenience of increased store hours would be worth it. Since both of us like shopping together, normal commissary hours are inconvenient. We'd much prefer the capability to shop during the week after dinner in the 7:30 - 9:00 p.m. time frame.

-- I appreciate the commissary as a military benefit, but they seem to be progressively becoming less and less of one (crowded, prices not especially competitive, hectic).

-- Establish earlier opening hours. Have all registers open when store is crowded. Have all shoppers line up in a single que and use a "traffic minitor" to direct carts to the open registers.

-- Commissary should be open longer hours.

-- A suitable cash allowance would seem to be the solution, since continued shortening of hours and fewer employees makes commissary shopping to be generally most unpleasant.

Lieutenant Colonels

-- I would appreciate an earlier opening hour at least 3 days a week-- like 8:00 a.m.

-- Commissaries and BX unnecessary. They should be eliminated except in isolated locations. Additional compensation to enlisted personnel only. None to officers.

-- Never use the commissary because of waiting, crowds, discourteous patrons.

-- Store hours should be changed to open the commissary earlier. With the late opening, waiting for parking, waiting for cart and check clearance, slow shopping because overcrowding, and long waits to check out, a mother cannot go shopping and get home before school children are home. The unsatisfactory aspects were difficult to mark because all except tipping are irritants.

-- Good luck. I was stationed at Wright-Patt before and things haven't improved in this area at all.

-- W-PAFB commissary is the most poorly operated commissary facility I have seen in over 20 years in the Air Force. Not only do they not have enough check out points for their volume of traffic, they don't even keep them all manned! General policy is poor as exemplified by local regulation concerning cigarette purchase. Glad to see you're doing the study -- hopefully you can get them to shape up...In considering your conclusions, keep in mind the attitudinal changes which occur in DoD and Congress. Right now service pay, etc., is relatively high but in the future the trend will again change and service folks will be hurting. It is during those periods of negative pay imbalance that the fringe benefits such as commissaries, BX's, etc., really help our people. I guess what I'm saying is -- look at the thing long term, not just from today's perspective.

-- Strongly urge more after duty hours shopping; i.e., open after 1800 more than one night a week, particularly on paydays and prior to holidays.

-- I will not use commissary around payday. Also very much in favor of opening at 8 a.m. again. I now go at 10:10 when I seldom have to stand in line. If you do your shopping and don't look over every item in the store you can get right out. Too many people block the first aisle. Also think kids should be in seat in basket or kept out.

-- For your information -- I recently did a personal survey of commissary prices vs prices at an IGA store. I compared fifty items (meat, canned goods, paper products, bread and dairy products) purchased at the commissary with the identical items (name brands) at a local IGA. Generally, the commissary items were cheaper -- the items on "special" at IGA were usually about the same as commissary prices. I totaled the

cost of the commissary items and included the service charge and saved 16% on a hundred dollars worth of groceries.

Colonels

-- Your list of unsatisfactory aspects reads like a description of the W-PAFB Commissary.

-- Many of the deficiencies here don't exist at other bases. There is very little good that can be said about the W-PAFB commissary.

-- In general the commissary has the following unsatisfactory aspects: parking facilities poor. Aisles too narrow to accomodate shopping patrons plus check out lines. Long lines to check out. I suggest earlier hours on several days, i.e., 8:00 a.m.

Airmen and Airmen Basic

-- Wider aisles would probably keep check out lines from blocking the aisles. When I take a number for the deli my husband and I are usually finished with our shopping before it even gets called. Some prices aren't marked at all. Most of the time they are marked and easy to find.

-- Other than cigarettes I find that the commissary prices can be matched at most commercial supermarkets.

-- It is my opinion and the opinion of others also to get rid of all commissaries and give the airmen a substantial amount of additional rations.

-- It's nice to shop there because some things are cheaper but why don't you get rid of those bag boys because they're a pain in the neck. I tipped one of those guys fifty cents the first time I ever went there and he told me it wasn't enough.

Airmen First Class

-- I just don't feel that the commissary is worth the hassle you have to go through to save a few dollars. I would much rather receive that extra money on my paycheck and do my shopping where I don't have to fight unpleasant crowds and traffic.

-- keep the stores.

-- For a period of time I was unable to get meat cut for my particular desires so I quit going there

-- Why was this form sent to someone like me who has to eat at the dining hall. I was in Germany from May to August. I used the commissary there more than the W-PAFB commissary. I feel that persons that would like to receive food allowance and live in the barracks should be looked into. Use the meal card for those who wish to eat on base.

Sergeants

-- Not enough check out counters open at peak periods. I have waited an hour or more in line!

-- I have had ice cream melt after waiting in the check out line for half an hour.

-- If the commissary was ever to be done away with, the food allowance should be non-taxable. Also the allowance should not affect the subsistence allowance we now receive.

-- Time to shop -- It seems everybody shops on Saturdays...

Staff Sergeants

-- I would have been more helpful if I shopped at the commissary. I have a new military wife and we have not been to the commissary yet. Good luck, and I hope this amounts to more than just a thesis.

-- There is no easy way to solve the problem at Wright-Patt., except a larger commissary.

-- I believe that active duty personnel should receive preferential treatment. This is a military installation, not a retirement resort.

-- Your meat looks very unappetizing. More cash registers. Open more check out lines on pay days. Parking facilitation is unbearable. Too many ignorant people can't read arrows. You shouldn't have to show an I.D. card while in uniform. I believe it is too much of a hassle. Parking spots for generals and handicaps are NEVER occupied. Should

relocate their parking facilities. Several items are unmarked. Crosswalks are located in the wrong place between commissary and B.X. Everytime the military gets a pay raise the commissary hikes up its prices (months before we get the pay raise). You should open up at earlier hours before 10:00. More convenience. Some items, such as laundry detergent, are priced higher than on the outside. "Signed by a disappointed, unsatisfied commissary shopper."

Technical Sergeants

-- The meat selection is ridiculous as is the produce; and the store layout is the same. The Commissary at Wright-Patterson is inadequate for my family's needs. The few times that I have shopped at the commissary, I have always had to go to another store for items that the commissary is out of. The commissary at W-PAFB is the WORST commissary I have ever encountered. I suggest you look at Keesler AFB, Miss.

-- During cold weather, must stand outside waiting to get in. Plus snowing and raining. I have been stationed here at W-PAFB for four years now, and to me, this is a poor commissary due to the building. What happened to the new commissary they were going to build?

-- I feel that a civilian store would have much lower prices than the commissary if they did the volume of business that the commissary does.

-- Only recently my wife and I shopped at the Commissary, Fort Campbell, Ky. There were no lines waiting in or out, all of the check out counters were in operation with cashiers. There is no excuse for the crowded conditions that exist at this commissary, when other places seem to run more smoothly.

Master Sergeants

-- This is without a doubt the worst AF Commissary I've ever utilized. I was stationed here several years ago and returned again in 1976. The ONLY improvements that have been made are the addition of the bakery counter and deli counter. The produce generally appears to be items that have been turned down by other stores. The meat cases have a poor selection and most of the cuts look like they've been done by an amateur. The store stopped opening early to reduce hours so that more check out lanes could be kept open. Now half the checkers don't show up. The

store stays open late one evening a week for the convenience of the working people. On this evening most of the shelves are empty, meat selection is extremely limited, and bread selection is limited.

-- Until we get a new commissary at Wright-Patt., parking and stocking of shelves is a must for improvement in the one we have.

-- The choices given for the unsatisfactory aspects of shopping at the commissary sums it all up. If the prices were not lower than at civilian supermarkets, I would not shop.

-- I feel that W-PAFB Commissary does a good job considering all of the people that they serve.

-- Hope survey results cause IMPROVEMENT.

-- Bag boys are in too much of a hurry to be courteous.

-- Attitude of check out cashiers to those people who use coupons is frequently discourteous. If one shops alone one has to unload the cart, sort through coupons and put appropriate coupons with product. Sometimes cashiers go so fast that one gets confused and cashiers are often rude. Attitude of employees should definitely be changed; without customers, they would have no job. Also, when one goes to the commissary office to ask a question, employees there ignore one until it suits them to notice that someone is waiting. Talking between themselves when a customer is waiting is a frequent habit. Just a thought. Why not aisles that go _____ instead of | | and a separate area to check out. _____

-- I really can't put my finger on it, but I'm quite turned off by bagboys and tipping. I don't have the answer! I hate to see younger troopers pay (when they can hardly afford it) a tip. I would like to see only school kids doing that work. Even bag your own, but that holds up the line, and you don't need that. As crowded as it is, there must be some answer to the problem. 1) maybe more hours 2) two nights a week 3) I don't know the financial aspect, but even consider Monday with part-time workers or shift. 4) commissary being away from congested area could help in parking.

-- I feel the commissary should open before 10:00 a.m.

Senior Master Sergeants

-- I have asked for a recheck of cash register tapes two times. Both

times office personnel have been very discourteous, making me feel like a criminal and talking loud enough or yelling at me to make other shoppers stop and look at me which was extremely embarrassing. (Once a lady supervisor told me to put the sacks in the office and then yelled at me to "GET OUT. YOU AREN'T ALLOWED IN THERE!" when I was trying to follow her orders and put the packages in the office so that they could be checked. Then they had to find a paper roller for the adding machine. It took about an hour to get this recheck completed. Each time I was charged more than a dollar too much. The commissary does not have adequate space to make grocery rechecks. The bag boys (most of them) look mad enough to hit you if you don't tip a dollar or more. Take out carts should be plentiful enough so that a bagger could do the bagging and the purchaser could take the cart to his/her own car. Fewer baggers would be required.

-- This commissary is generally too small for the population served, therefore it results in an unpleasant shopping experience that I avoid, even though it costs me more to shop elsewhere.

-- The commissary is one of our most cherished benefits. The crowd which frequents the place attests to its importance in the military and retired community's budget. More concern about the customer's convenience and better management of store times, stocking times and closed times would greatly enhance the commissary's reputation and utilization among the military community.

-- Shopping at the commissary has some mild irritants, but considering the convenience for me and the savings involved, I feel it is a plus for all military personnel.

-- If the employees could understand that serving the consumer is part of their job and be a little more pleasant it would help. I understand the difficult job they have, but we have feelings too.

-- You should incur several more years of active duty to pay for this survey. You are costing the tax payers a lot of money.

Chief Master Sergeant's

-- The W-PAFB commissary is located in an area that is least convenient to the majority of base personnel. It should be near Page Manor or in Area B to service Page Manor residents and Woodland Hills. Parking is atrocious; the facility depressing; the lines of patrons ridiculous. The employees, for the most part, are pleasant and congenial. Wright-Patterson needs a larger facility. I state these things with full

knowledge that Congressional funding for a new facility is difficult; and that political restraints will not allow for relocation to another area besides "C" or Kittyhawk.

-- The commissary at W-PAFB is the worst overall situation we have encountered. Primarily crowded conditions, limited selections in certain areas, etc., all combine to make shopping at the commissary unpleasant.

-- With the moving of the commissary and BX to the Kittyhawk Center and that area into a shopping mall, I am sure that personnel and their families will be satisfied with what the commissary can provide in the way of service.

VITA

George Edward Boyd was born on September 8, 1948, in Opp, Alabama. He graduated from Opp High School in 1966 and attended Auburn University for one year before applying for entrance to the United States Air Force Academy. He graduated from the Academy in 1971 with a Bachelor of Science Degree in Engineering Management. He married Darci D. Bogert in June, 1971, and they have three children. He went to pilot training at Sheppard Air Force Base, Texas, and following pilot training flew the C-141 aircraft at McGuire Air Force Base, New Jersey. He entered the Air Force Institute of Technology in August, 1976.

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| 17. SUPPLEMENTARY NOTES Approved for public release; LAW AFR 190-17 JERRAL F. GUESS, Captain, USAF Director of Information | 18. KEY WORDS (Continue on reverse side if necessary and identify by block number) Commissary Privilege Commissaries Military Benefits Commissary Savings History of the Commissaries | 19. ABSTRACT (Continue on reverse side if necessary and identify by block number) This study makes use of price comparison data from the Wright-Patterson Air Force Base Commissary and two local supermarkets in order to provide a current percentage of savings which can be realized by shopping at the commissary. A "Commissary Shopping Survey" was distributed to active duty military personnel in the grades from Airman Basic to Colonel. The survey contained questions that make it possible to determine the "perceptions" of value by the active duty personnel. When the percentage of savings which was found in this study is | |

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incorporated into a cost model along with data from survey returns the "value" of the commissary privilege at Wright-Patterson can be estimated. The new considerations in this study on the value of the commissary privilege are 1) the percentages of savings in this report consider all of the direct costs of groceries and 2) a value is assigned to time spent shopping for groceries. The estimated "values" are applicable only to active duty military personnel stationed at Wright-Patterson.

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